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ORIGINAL ARTICLES.

NOTES OF AN EPIDEMIC OF ACUTE ANTERIOR POLIOMYELITIS.

Read in the Section on Neurology and Medical Jurisprudence at the Forty-sixth Annual Meeting of the American Medical Association, at Baltimore, Md., May 7-10, 1895.

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The following "Notes" are the result of an investigation undertaken by me in an official capacity at the time of the outbreak, and since continued through private and professional intercourse.

The epidemic was one of an acute nervous disease whose chief distinguishing characteristic was motor paralysis, more or less complete, of one or more members or groups of muscles, and which prevailed in the State of Vermont, chiefly in a single valley, during the summer of 1894. The results of my investigations as far as completed at the time were published in the *Yale Medical Journal* for Nov., 1894, and in the *New York Medical Record* for Dec. 1, 1894. At the time of making these reports it did not seem possible to speak of the epidemic more definitely than as one of "acute nervous disease of unusual type." A further careful study of the complex features of the epidemic, however, and of the subsequent history of many of the cases, together with the corroborative opinions of many able medical men, seems to clear up any doubt that at the time existed as to the correct diagnosis of the essential disease that prevailed.

I may state at once that I am indebted to Professors A. Jacobi, M. Allen Starr and Chas. L. Dana for very valuable aid in arriving at a diagnosis in this series of cases, as well as for notes of the latest pathologic views of poliomyelitis and a literary résumé of that disease. I am also indebted to my fellow practitioners of Vermont who have kindly placed at my disposal the results of their clinical observations of the epidemic. This paper is necessarily largely a recapitulation of the facts heretofore published about this epidemic, with a careful revision of the statistics of the outbreak made from recent observations.

The epidemic, as I have indicated, invaded our valley in the early summer of 1894. It prevailed with increasing severity during July, apparently reached its climax about the first of August, and steadily declined until about the first of October, the last case occurring early in that month.

The early summer was popularly considered unusually hot and dry, though the official figures do not substantiate the former opinion. That it was an exceptionally dry season is manifest from the figures of the United States Weather Bureau of the State, which show that the rainfall during the five months from April to August inclusive for this year was one-third less than the average for these months since the opening of the station in the State. The temperature and humidity statistics show little variation from the average. The territory mainly covered by this outbreak is a portion of the Otter Creek Valley, about thirty miles long and from twelve to fifteen wide, including the sides of the bounding mountains. On the east of this part of the valley is the main Green Mountain range, and on the west the Taconic range, which is a northern extension of the Berkshire Mountains of Massachusetts. Otter creek, the largest stream of water in the State, has its source in the mountains to the south of the affected area, and sluggishly flows in a northerly direction through it, emptying some miles below into Lake Champlain. That part of its course through the affected district is the most populous and likewise the narrowest part of the valley. The city of Rutland is the commercial and geographical center of this area. The towns affected have a combined population of 26,000, of which fully two-thirds dwell in the quarrying and manufacturing centers of Rutland, West Rutland and Proctor.

The starting point of the epidemic, and most of the earlier cases, were at Rutland. In this city occurred 55 of the 132 cases of which I have notes; 27 of the remainder occurred in the town of Proctor, one-sixth the population of Rutland. This town suffered the worst of any in the valley. The remaining fifty cases were scattered over the rural districts in fourteen towns. The most of these cases occurred at considerable elevation above the creek, and many well up on the Green Mountains. Four of these towns with eight of the cases are not in the Otter Creek Valley. The natural drainage of the valley is the creek, and this stream, below Rutland, carries a large amount of sewage. If the disease had shown any preference for those houses immediately on the stream below Rutland, it might at once be inferred that the low water in a sewerage-contaminated stream had some bearing on the etiology of the disease. But such did not appear to have been the case, except, possibly, in the town of Proctor, which is six miles below Rutland and is built on the abrupt bluffs above the stream. Drainage defect in general did not seem to influence the distribution of the disease. The water supply was excluded as an etiologic factor, it being largely from wells in the rural communities, and in the villages from mountain streams and springs. That the general sanitary surroundings and methods of living were in anywise responsible for the outbreak is also more than doubtful, since the disease showed no partiality to that class of the population whose habits and surroundings are the most unsanitary. The so-called laboring classes were oftenest affected, but not out of proportion to their numbers. These classes here, whether among the farming population or in the mills and quarries, have usually pure air, food and water. Hence, general sanitary conditions did not seem to have any influence on the epidemic.

The geologic formation of the valley is not pecul-

iar. The prevailing formation is limestone, and in the range that skirts the western border of the valley is found the chief marble deposit of Vermont. The valley as a whole is an old lake basin and is pronounced by Prof. G. W. Perry, the State Geologist, as a very ordinary valley.

The outbreak of which I speak consisted of upward of 130 cases of disease in which the commonest clinical manifestation was some degree of motor paralysis of widely varying extent. It will not surprise any one that so large a number of cases presenting a bewildering variety of initiatory constitutional symptoms, as well as local paralyses, should have proved a very knotty problem for the diagnostician. It was long a question whether this was an epidemic of one, two, or more diseases, and along the established lines of symptomatology and pathology there was no solution of the problem. I have been able to collect histories more or less complete of 132 cases directly affected in this epidemic, and this number probably represents at least 90 per cent. of the whole number.

Case 1.—Boy, 3 years, American. Hygienic surroundings good; previous health good; active child; stronger than his brother two years older. No apparent cause. Fell sick June 20. Moderate fever, coated tongue, loss of appetite, sluggish bowels. His condition was confidently ascribed to indigestion, and after two or three days the continuance of the symptoms, though in decreasing severity, proved troublesome of explanation. On the third day his parents insisted that he could not use his legs. It was soon evident that this was the case. His reflexes were normal, sphincters unaffected, no anesthesia or noticeable hyperesthesia. The weakness was most marked in the large extensors of the thigh. After the entire subsidence of his febrile symptoms, his muscular weakness began to improve, at first very slowly. In three weeks he had gone on to full recovery.

This case is an excellent illustration of the mildest type of the disease, a type that included about forty cases.

Case 2.—Boy, 3½ years, Irish. Hygienic surroundings fair; sturdy child; most active of a family of three children. Only apparent cause playing too hard on a hot day. Taken with high fever, temperature 102° to 104° F., nausea, general restlessness and headache. Had incontinence of urine, no albuminuria. On third day acute symptoms subsided except the incontinence of urine. It was then noticed that he had lost the use of his legs. Patellar reflexes diminished and considerable hyperesthesia of the legs. There was also diminution of faradic irritability. The left leg improved rapidly, the right slowly. After six weeks was able to stand and take a few steps by taking hold of chairs. After three months the paralysis and wasting were confined to the right glutei and lower spinal muscles. His efforts to walk have brought on a slight spinal curvature. The incontinence of urine continued in this child until Feb. 1, 1895, when it was relieved by circumcision. The paralysis, however, persists in the glutei and lower spinal muscles and promises to be permanent.

This case illustrates a very common phase of this epidemic, and in most of these cases there is probably some permanent impairment of certain muscles.

Case 88.—Practice of Dr. Gale, Rutland. Girl, 6 years, American. Previous health had been frail. Had had a spinal curvature since she began to walk. Taken suddenly with high fever, nausea, head- and backache. On the fourth day of the attack she was paralyzed in all the extremities and one side of the face. Febrile symptoms subsided at this time. There was extreme hyperesthesia of the whole body and obstinate constipation from seeming lack of power in the abdominal muscles. Facial paralysis speedily passed off. Hyperesthesia and pains in the joints required the use of morphin for several weeks. After nine months she is still paralyzed in all the extremities, being able to flex the fingers and toes slightly and raise the head. The hyperesthesia has passed off.

Case 116.—Practice of Dr. Swift, Pittsford. Boy, 4 years, Italian. Taken with headache, drowsiness and slow hobbling pulse. Little fever. After four days developed strabismus. Improved speedily and at the end of four days was apparently well. Three days later, after playing too hard, had a return of the original symptoms. Headache, drowsiness, no fever, pulse 45. In two days from this time had a convulsion and speedily died.

Case 32.—Practice of Dr. Marshall, Wallingford. Woman, 21 years. Married and one child of 16 months. Apparent cause fatigue from nursing sick child. First had head- and backache. Pulse 80, temperature 98.6°. On third day pulse 100, temperature 103.5°. Some opisthotonos; bowels regular; urine, 2 pints in twenty-four hours. No albumin, no sugar. Urticarial blotches on the body. During the next three or four days temperature ranged from 100.5° to 102°, pulse about 100. Was unable to speak or swallow. Answered questions by moving the head; in no pain. Sixth day temperature 98.6°; pulse 60. Remained in this condition five days. On the eleventh day complained of severe pain in the stomach, and neck became rigid; pulse 100, temperature 98.6°. During the next two days pulse became very irregular. Complained of severe pain in the right side of the head and right eye. Died at the end of the second week.

Case 4.—Practice of Dr. Fox, Rutland. Boy, 6 years, previous health fair. On two or three occasions had convulsions, presumably due to gastro-intestinal disturbance. Was seized with convulsions while playing on the street; they continued for nine hours. Moderate fever, rapid pulse, vomiting and rigidity of muscles of the neck and back. No paralysis noted during conscious intervals. Retention of urine during the last three days of illness. Death on the sixth day.

These four cases represent various types of the severe form of the disease, and among these cases there were eighteen deaths.

There were a great many cases exhibiting rare and interesting phenomena, a detailed report of which would consume too much time. One of these, during an attack of broncho-pneumonia, had loss of speech for two weeks, and paralysis of one arm which recovered in five weeks. One developed paralysis of both legs in connection with pneumonia. The paralysis in one case was confined to the external rectus of one eye. Several, after apparently recovering from the acute symptoms, were again attacked more severely than at first. Two cases, in which the legs were paralyzed, had a concurrent fever with the characteristic typhoid curve. One case was that of a boy of 6 years who had been at the seashore during the summer, and returning to the town of Proctor after the epidemic was apparently on the wane, on Sept. 5, was attacked with the typical symptoms of poliomyelitis on Sept. 30, and is left with impairment of the extensors of one thigh and the glutei. This case is interesting as showing possibly the length of the incubation period of the poison if we class the disease among the infectious disorders.

Without detailing further individual cases, a condensation of my notes presents the following clinical picture of the epidemic:

Age and Sex.—Ninety cases were under 6 years of age; 39 were boys and 22 girls; sex of the remainder not stated. Fifteen cases were between the ages of 6 and 14; 5 were males and 6 females; sex not stated in 4 cases. Fifteen cases were over 14 years; 9 were males and 6 females. In one series of cases, 7 in number, the age is stated as between "a few months and 9 years," and the sex of none is given. In another of 5 cases, neither age nor sex is stated. It is interesting to note in this connection that there were 9 cases in adults upward of 21 years of age. One of these was a man of 70 who had the familiar symptoms of the milder type of these cases with paralysis of both legs, which passed off in ten days. The other 8 cases were in persons from 21 to 38 years of age. These figures as to age and sex do not differ

from those usually given for poliomyelitis. While it is chiefly a disease of childhood it is not exclusively so. Males are vastly more liable to it.

Nationality.—In those cases in which the nationality is stated 41 were American, 17 Irish, 6 French, and one each was Hebrew, Italian and Swede. I know of no significance to attach to these figures.

Previous Health.—Of the 46 cases in which the previous health of the sufferers is given, in 35 it is given as good, and in 11 as poor. It is quite certain that the strong, healthy children preponderated.

Immediate Cause.—The immediate apparent cause is stated in 37 instances. Of these overheating is mentioned 24 times, chilling of the body 4 times, trauma 4 times, while fatigue, typhoid fever, pneumonia and whooping cough are mentioned. There was a general absence of infectious disease as an etiologic factor in this epidemic. The element of contagium does not enter into the etiology either. I find but a single instance in which more than one member of a family had the disease, and as it usually occurred in families of more than one child, and as no efforts were made at isolation, it is very certain that it was non-contagious.

Initial Symptoms—Fever.—In most of the cases there was a perceptible rise in temperature at the start, though a few are said to have had none. Of the 56 cases in which the temperature is noted, 27 had a temperature at some time of 103°, or more, while in 26 it ranged from 99° to 103°. Three are said to have had "no fever." The duration of the initial fever, where given, varied from a few hours to two weeks. The four cases, however, that are said to have had a fever for more than a week, probably suffered from some complication or some intercurrent disease. Twenty-six cases had a febrile stage lasting from four to seven days, 7 lasting from three to four days, 6 lasting two to three days, 2 lasting one to two days, and four for one day or less.

Digestive Organs.—Nausea was a very common symptom and is mentioned as occurring twenty-six times. It was often the first symptom noted and was probably one of the commonest. Gastralgia occurred in few cases. Thirteen cases were said to have had obstinate constipation, and six had a diarrhea.

Urinary Organs.—Two cases had incontinence of urine and in ten cases there was retention. In no case is albuminuria mentioned.

Skin.—Thirty cases are said to have had a simple erythema, and two had urticaria. There was an entire absence of herpetic and purpuric eruptions.

Nervous System.—Convulsions occurred in 12 cases, all under 14 years of age. Muscular rigidity of the neck or back muscles or both is said to have occurred in 20 cases, of which 5 were fatal. It is a very significant fact that 36 cases are noted as having hyperesthesia of the skin. Only one is said to have had any anesthesia of the paralyzed member. In several instances soreness of the joints of the affected limb was a very painful symptom. Nine cases are said to have suffered from headache alone, 2 from pain in the back and 23 from both head- and backache. These symptoms were probably commoner than the figures indicate. There was no general tendency to impairment of the special senses. Two cases are said to have had double vision, 3 strabismus, one was blind and one deaf.

Initial Paralysis.—The paralysis which was the leading and most common characteristic of this series of cases, occurred in 119 instances. Of the remaining 13, 7 died before paralysis had time to develop, or it could not be determined whether there was really paralysis or not, and the remaining 6 that had no paralysis, all had a group of symptoms very common in the initial stage in those which were paralyzed, such as headache, fever, convulsions or nausea, one or all. In those cases in which the exact day of the paralysis is noted, it is stated to have occurred four times on the first day, eight times on the second, ten times on the third, five times on the fourth, three times on the fifth, once on the sixth, four times on the seventh, and once on the tenth day of illness. It is quite likely that the actual duration of the premonitory symptoms prior to the appearance of the paralysis was often overestimated, since loss of power in the extremities, especially in children, might easily go unnoticed for some time, unless the physician or friends were looking for it. In several instances the loss of power in the legs was the first symptom noticed. The initial paralysis was located as follows:

Both legs	69 cases.
Arm and leg, same side	10 "
One arm	5 "
One leg	7 "
Both legs and one arm	4 "
Tongue and throat	2 "
Both arms	3 "
All the extremities	4 "
Extensors of one thigh	2 "
"Variously in the arms and legs"	8 "
External rectus of one eye	1 "
One side of the face	1 "
One arm and the opposite leg	1 "
All the extremities and abdominal muscles.	2 "
Stated to have had no paralysis	6 "
Not determined	7 "

Of the six cases that are said to have had "no paralysis" all had distinct nervous symptoms explainable only on the supposition that they belonged to this epidemic. All the seven cases in which it was not certain whether they were paralyzed, died early, often with convulsions, and their occurrence at this time seems to warrant their being included in this series.

Of those cases that are known to have fully recovered according to the latest information I can obtain—

Both legs were paralyzed in	43 cases.
Arm and leg, on same side, in	4 "
One arm in	1 "
One arm and both legs in	1 "
External rectus of one eye in	1 "
One leg in	1 "
There was no paralysis in	5 "

That there have been more complete recoveries than this, viz., 56, is quite certain, but I have not been able to trace them.

Fatal Cases.—Eighteen deaths occurred as follows: 1. Boy, 10 years; died within twenty-four hours with convulsions. 2. Boy, 6 years; died on sixth day with convulsions. 3. Boy, 10 months; died on sixth day, paralyzed in both legs. 4. Boy, 4 months; died on sixth day, all the extremities paralyzed. 5. Girl, 11 years; died on third day, no paralysis noted. 6. Girl, 1½ years; died on sixth day, no paralysis noted. 7. Female, 21 years; died on thirteenth day, no fixed paralysis. 8. Male, 19 years; died on fifth day, both legs paralyzed. 9. Sex and age not stated; died with convulsions. 10. Male, 21 years; died on third day, all extremities paralyzed. 11. Sex and age not stated; had paraplegia. 12. Sex and age not stated; had hemiplegia. 13. Girl, 7 years; died on seventh day, all

extremities paralyzed. 14. Boy, under 1 year; no paralysis noted. 15. Boy, 4 years; died on second day of relapse, no paralysis of the extremities, but strabismus. 16. Male, 22 years; died on third day, both legs paralyzed. 17. Male, 38 years; died on sixth day, both legs paralyzed. 18. Girl, 1½ years; died on fourth day.

It will be seen that 10 deaths were among males and 5 among females, and that the sex is not stated in three cases. Seven of those that died are known to have been under 6 years, three between 6 and 14 years, while one died at 19 years, two at 21 years, one at 22 years, and one at 38 years. The percentage of deaths among adults is seen to have been very high.

A further analysis of the deaths shows that five of the cases were paralyzed in the legs, three in all the extremities, and one was hemiplegic. I might state that in the great majority of fatal cases the diagnosis was meningitis. Such a diagnosis was usually not at all inconsistent with the clinical features of the disease. Deducting from the whole number of cases, those which are known to have terminated fatally, and in recovery (74 in all), there remain 58 cases to be accounted for. Just how many of these are still and probably permanently paralyzed, I am not able to state. It was a common experience for a part of the initial paralysis to clear up within the first month, leaving a single member or a single group of muscles weak and wasted. Thus, many cases that at first seemed to be paralyzed in both legs soon improved as to one, and the permanent lesion was seen to be in the other limb or in a few of its muscles. The extensor muscles of the thigh, the glutei, ileo-psoas, calf muscles, and anterior tibial group, in the lower extremity, and the deltoid and extensors of the forearm, were frequent sufferers.

Permanent Paralysis.—Of the 58 cases which my report left unaccounted for, I have been able to get reports of 30 which are still maimed, from six to nine months after the initial attack. Of these 16 are stated to be males, and 12 females. Eighteen are under 6 years, 7 are between 6 and 14 years, and 5 are over 14 years of age. Here again we see the high percentage among the older patients. Of these 30 cases—

All the extremities are paralyzed in	1 case.
Both arms in	1 "
Extensors of one thigh in	6 "
Glutei and lower spinal muscles in	1 "
Both legs in	6 "
Extensors of one thigh and one leg in	2 "
One leg in	6 "
Glutei alone of one side in	1 "
One foot and ankle in	1 "
Extensors of one hand in	1 "
Both legs, thighs and hips in	1 "
One arm in	2 "
Complete hemiplegia in	1 "

The muscular atrophy in most of these cases is marked though combatted by the usual treatment of rubbing, massage and electricity.

During this epidemic and in the same geographical area,an acute nervous disease, paralytic in its nature, affected domestic animals. Horses, dogs and fowls died with these symptoms.

The only reliable facts which I am able to give of the pathologic conditions in these cases among the lower animals are from examinations of the cord of a horse that died paralyzed in the hind legs, and from that of the cord and brain of a fowl which was paralyzed in its legs and wings. Dr. W. W. Townsend, of Rutland, who made the examination of the horse, says that the examination of a section of the lumbar portion of the cord showed a "granular degeneration and pigmentation of the ganglion cells of the anterior cornua, and atrophy of the anterior nerve roots." He further states that there was no meningitis in this case. Dr. Charles L. Dana, who made the examination of the fowl, with the aid of Dr. Dunham, of the Carnegie Laboratory, found "an acute poliomyelitis of the lumbar portion of the cord and no meningitis." A bacteriologic examination of the same cord by Dr. Dunham gave negative results, and it was found that the inoculating needle did not strike the diseased parts.

It was not infrequently remarked by physicians practicing in this valley at the time of this epidemic, that the usual diseases of children were accompanied with exaggerated nervous symptoms. Headache, convulsions and delirium were common.

It is recorded by Medin, in an epidemic of poliomyelitis which he reports, and to which I shall presently refer, that polineuritis prevailed with poliomyelitis. The pain, hyperesthesia, and tenderness of the extremities suggest such an explanation in some of our cases. Gowers is also cited by Putnam (*American Journal of the Medical Sciences*, March, 1895), as speaking of the combined occurrence of poliomyelitis and neuritis. It will be readily seen that it would be quite impossible to reconcile the widely varying phenomena of this epidemic with the established characteristics of any one disease. So it is not strange that local observers differed in their diagnoses. In collecting notes of this epidemic I did not seek any disease by name, endeavoring only to secure histories of such cases as had had well-marked symptoms of acute nervous disease, the paralysis usually being the test symptom. Meningitis, poliomyelitis and neuritis were mentioned with varying frequency, and it is only a careful study of the epidemic as a whole, giving due weight to the predominating symptoms, the paralysis, of course, being the most striking, together with a knowledge of the latest pathology of these diseases, that seems to warrant the conclusion that the essential disease was poliomyelitis. Some of the commonest symptoms seen in our epidemic were entirely foreign to this disease as long described. Likewise, too, its epidemic character and the simultaneous affectation of the lower animals. I am especially indebted to Dr. M. Allen Starr for notes of the latest views of the pathology of poliomyelitis.

In *Zeitschrift für Klin. Med.*, 1892, Goldschreider's views, founded on such cases as ended in autopsies, are given as follows: "The disease begins with a very intense congestion of the central arteries of the spinal cord which come up on each side of the central canal and spread out in the gray matter of the posterior horns, but the posterior horns are chiefly supplied with blood from the peripheral arteries, and hence, are less affected when the inflammation is limited to the distribution of these central arteries. After the engorgement of all the arterial twigs, diapedis occurs and the surrounding nervous tissue is permeated by small cells and by serum. It is this choking of the gray matter by the inflammatory products which leads to the suspension of functional activity, and when, as in many cases, from impoverished nutrition the cells of the anterior horns are actually disintegrated by the inflammatory products,

permanent destruction of the nerve tissue ensues. Goldschreider believes, therefore, that the primary condition is a congestion in the domain of a definite set of arteries, quite comparable to the condition occurring in the lung in pneumonia and in the intestine in typhoid fever.

Siemerling, in an article on the "Pathology of Infantile Paralysis" in *Archiv für Psychiatrie*, January, 1894, says: "After a careful review of all the literature we reach, therefore, the following conclusion, that in the pathogenesis of infantile paralysis the inflammatory lesion of the interstitial tissue in connection with a distension of the blood-vessels, especially in the region of the anterior spinal arteries, plays the chief rôle. A primary inflammation of the ganglion cells in the sense given by Charcot is not to be admitted."

In view of this newer pathology, showing as it does that the initial lesion is not confined to the anterior horns, but that there is a simultaneous invasion of other portions of the cord, the exceptional symptoms seen in our epidemic are rendered explainable.

The results of autopsies made by Rissler were even more striking. He found an acute parenchymatous inflammation of the anterior horns in the cord with degeneration of the ganglion cells and secondary degeneration of the nerve fibers in the association tracts, in the anterior columns and in the anterior nerve roots; also in the nuclei of the hypoglossus, vagus, facial and abducens nerves. In most of the cases the anterior horns were particularly affected; in other cases, also the peripheral nerves and brain cortex. It was possible that all the nerve nuclei in the medulla and pons should be affected. In the light of these recent pathologic researches taken in connection with the most noted clinical features of this outbreak, viz., the season of the year, the preponderance of cases among children, the widely varying and almost universal paralysis and the low mortality, the conclusion seems unavoidable that the essential disease was poliomyelitis. Under this classification the epidemic at once assumes great importance in several particulars:

1. From the simple fact that it was an epidemic of poliomyelitis.
2. From the great number of cases occurring.
3. From the simultaneous affectation of the lower animals.

While epidemics of poliomyelitis are not unknown or unrecorded, recent authorities speak only vaguely of their occurrence. It has not thus far found a definite place in the descriptions of this disease. The fact that poliomyelitis may occur epidemically, suggests, of course, an infectious origin, a view of the nature of the disease which has only been recently discussed.

I have been able to find the following reference to outbreaks of poliomyelitis of epidemic character, largely through the assistance of Prof. Jacobi.

In the transactions of the Tenth International Congress (Berlin, 1891), Vol. II, Prof. O. Medin reports that Bergenholtz in Sweden observed and reported thirteen cases occurring near Lyons, France, four of which were fatal. Medin also cites Eichhorst, who speaks of observations sometimes made of several cases occurring in the same neighborhood. G. Lotmer (*American Journal of the Medical Sciences*, 1843) was told by the parents of a child treated by him for poliomyelitis (teething paralysis), that in a place where they previously lived eight or ten cases had been known within three or four months. Medin's epidemic, however, is the most extensive of any of which I find a record, and bears in many respects a close resemblance to the Vermont epidemic. The disease appeared in Stockholm in the month of May, 1887, and by Aug. 9 had assumed an epidemic character. Medin saw twenty-nine cases between the latter date and Sept. 23, and knew of forty-four during the summer from May to November. Three of his cases were fatal in the acute stage. "There were noticed paralysis of the abducens in five cases, disturbance of speech in a few; in one case paralysis of the tongue, in several of the accessorious; in others, symptoms referable to the vagus. Disturbance of the voice and paralysis of the muscles of mastication and vasomotor paralysis were seenin two fatal cases. In one ophthalmoplegia externa. At the time of the Stockholm epidemic during August and September, polineuritis appeared and was thought to be due to the same cause. This neuritis was followed by considerable tenderness. These neuritis cases, however, showed no wasting."

It will thus be seen that Medin's observations are very similar to those here recorded, and together with the latest pathologic views of the disease, will seem to mark the neuritis of which he speaks as a varying manifestation of poliomyelitis.

Putnam (Boston *Medical and Surgical Journal*, Vol. CXXIX, p. 509) speaks of the unusual prevalence of poliomyelitis in and about Boston during the latter part of the summer of 1893. Twenty-six cases had come to his notice during that season.

That a disease occasionally prevails epidemically suggests a specific poison, a definite toxin, and this phase of the etiology of poliomyelitis has recently received attention from foreign observers as well as from Dana, Putnam and others in this country. Thus far, however, there does not seem to have been any substantial progress made toward isolating any specific microörganism peculiar to this disease.

Our epidemic with that of Medin suggests, though on purely clinical grounds, the possibility of such a cause. The unfortunate absence of an autopsy in our cases, though strenuous efforts were several times made to secure them, prevents us from throwing any light on this part of the subject. That domestic animals suffered with human beings in our epidemic is a noteworthy fact and one, so far as I can learn, hitherto unobserved. That such was the case can not be doubted. It has long been known that animals were often attacked by meningitis during an outbreak of that disease in epidemic form. Poliomyelitis has been produced artificially in rabbits and guinea-pigs, but so far I have been unable to find an instance of its spontaneous occurrence simultaneously with the disease in man. This fact again emphasizes the possible infectious character of the disease and lends additional interest to the epidemic here recorded.

DISCUSSION.

DR. J. F. BURNSHED—The paper of Dr. Caverly I consider to be one of very great importance because it deals with an epidemic which will go down in history. This epidemic was not confined to Vermont. Where I lived in New York State, we had what I considered to be an epidemic of poliomyelitis at the same time as that which existed in Vermont, and it was a matter of much concern to us until the literature began to come in.

RIGHT HEMIPLEGIA WITH APHASIA—A CASE.

Read in the Section on Neurology and Medical Jurisprudence, at the Forty-sixth Annual Meeting of the American Medical Association, at Baltimore, Md., May 7-10, 1895.

BY H. M. LASH, M.S., M.D.

INDIANAPOLIS, IND.

On Nov. 14, 1894, about 12 M., Mr. L., age 35, married, habits excellent, health previously good, was, without any warning or prodrome, while sitting at his office desk, stricken with complete loss of the use of the right side and with entire loss of voice.

I reached him at 12:40 P.M. Dr. J. T. McShane, who was with him, had noted his condition and had prescribed for him. He had then recovered, in part, the use of his hand, so that he could write his name, as he did to some checks and several letters which he had that forenoon dictated. With a little help he could use his leg sufficiently to walk out to the street and get into a carriage. Soon after he did so, however, he again lost the use of both the arm and the leg. This condition remained until just before the carriage reached his residence, when he recovered for the second time the normal use of them, and got out of the carriage and walked unaided into the house. This was at 1:15 P.M. So far he had not spoken, but had uttered a slight unintelligible scund when the motion of the limbs returned the second time. His overcoat was removed and he lay down upon a couch. Within a few minutes after doing that, his voice came back and he was able to converse in his usual manner, and talked the situation over with me in an intelligent way. But this lasted only about twenty minutes, when the hemiplegia and aphasia both returned with their full force. Aside from the loss of the use of his right arm and leg and his voice, there was no other abnormal condition present. There was no loss of sensation, partial or complete, in any part of the body. His intellect was unimpaired. He understood and knew the meaning of words, and made correct answers by nod or shake of the head to all questions asked. His tongue protruded readily and in a straight line. His sight and all other special senses were undisturbed. The reflexes were all normal. He did not appear to be sick in any way; had not felt dizzy, and at no time had he been for a moment unconscious.

He was put to bed and quiet enjoined. I visited him at 7 P.M. At that time found the temperature 99.6 degrees F., pulse 86. Complained of some dyspnea, and had to be propped up in bed. His urine had passed freely. He could make himself understood by using a few simple words, such as "yes" and "no." Next morning at 7:30 I saw him again. His sleep had not been very good; had been troubled a little with dyspnea. Speech better. Was called at 3 P.M. Had to use a catheter, and this was kept up each day until Nov. 24. Temperature and pulse normal; neither were afterward abnormal. Ordered saline cathartic. Bowels responded and their action was easily kept up from that on by enemas. Dyspnea had disappeared and he was not again troubled with it. His speech gradually improved until on January 1 he could talk almost as well as usual.

The first appearance of motion in the right leg was on Nov. 24, ten days after the attack, when it was found that he could move the toes and foot a very little. On Nov. 26, he could move the entire leg, but to a very limited extent. On Dec. 12, he began sitting up and could then bear some weight on the right leg and take a few steps. Christmas day, with a little help, he walked to the dining room. The improvement has continued, and he now walks about very well with the aid of a cane.

The first indications of motion in the arm were noted on Jan. 1, when he could make some use of the biceps and triceps muscles, slightly flexing and extending the arm. On Jan. 24, it was found that he could use the thumb and index finger a very little, and that there was increased muscular action of the upper arm muscles.

On Feb. 6, improvement in the use of the right thumb and index finger, as well as the whole arm, was observed, and he could slightly move all the remaining fingers on the right hand.

This is quite a well-defined case of right motor hemiplegia with ataxic aphasia, having a strong tendency toward recovery. The improvement has been gradual but steady, and is still going on. The prognosis, therefore, may be regarded as fairly favorable.

In regard to diagnosis, there is very good ground for differences of opinion concerning the nature and seat of the lesion. It must be conceded, however, that it is cerebral, and located somewhere on or in the left side of the brain.

My own diagnosis on the beginning of the trouble was an embolism of the left middle cerebral artery. I have found no reason since to change it. In my judgment it is a typical and clearly marked case of that condition. The suddenness of the attack and its purely motor character, pointed to the left cerebral motor area and Broca's center as the seat of difficulty.

Hemiplegia may result from cerebral or high up cord lesions. If from cerebral lesion, the paralysis is on the opposite side of the body; if from spinal lesion, it is on the same side. This is the rule, and to it there are very few and rare exceptions.

The hemiplegia from intra-cranial lesions may result from apoplexy or brain clot, tumors, softening, abscesses, traumatic or inflammatory compression, thrombosis and embolism.

A brain clot may be cortical or subcortical. If subcortical, it may be located in the white substance, the basal ganglia, the internal capsule, the motor bundles of the crus and pons, or in the anterior pyramids of the medulla. These are all entitled to consideration in the general discussion of this question, but the method of reaching the right cause in a given case, as in the one reported, must be by exclusion.

In the case presented, the cause is not a cortical surface clot, because it is not likely it would occupy so much space and select only the motor area and Broca's center, without producing other and striking manifestations of its presence.

There is probably not a subcortical clot because in that event there would likely be disturbance of sensation of some of the special senses, particularly that of vision, an implication of the facial muscles, with mental aberration, loss of consciousness and muscular rigidity. This observation applies to any of the subcortical tracks or basal ganglia.

It is difficult to conceive of any of these that would cause only the motor paralysis on one side. The possible exception might be a lesion of the internal capsule. Motor fibers, sensory fibers, fibers of the speech tract and fibers of the optic tract pass through the internal capsule. A lesion might only affect the motor fibers. But as the relation of these fibers from before backward is as follows—viz.: (1) motor fibers, (2) sensory fibers, (3) fibers of the speech tract, (4) optic fibers—it would be next to impossible to have a lesion there producing only motor paralysis and motor aphasia without some disturbance, to say the least, of sensation and probably vision. And then the speech difficulty would more likely be a paraphasia instead of an ataxic aphasia.

A lesion of the basal ganglia lying on either side of the internal capsule, if sufficient to press upon its fibers, would produce similar results.

A lesion in the pons or medulla would produce, besides hemiplegia, hemianesthesia, incoördination, strabismus, facial paralysis, paralysis of the third and seventh nerves, difficulty of deglutition, irregular respiration, convulsions, coma and death.

Tumors, softening, abscesses and inflammatory products are really excluded from the discussion of this case, because there is no history of any brain disease or indication of it whatever. So also of thombosis, in which there is a gradual occlusion of a blood vessel caused by the development in the vessel at a fixed point of an obstruction that finally fills it up

and cuts off the circulation, which is attended by prodrome and evidences of brain disease.

Motor aphasia is due to a lesion of the third frontal convulation—Broca's center—or a cutting off by pressure or otherwise, the fibers of the motor speech tract.

In the case mentioned, if there was only motor aphasia without hemiplegia, I think we could only conclude that the difficulty was with Broca's center, for the reason that at no other point could a lesion exist, producing ataxic aphasia without complications.

In our case there is a pure motor hemiplegia of the right side and a true motor aphasia. A consideration of either separately would lead to the opinion that the cause was cortical. That view is certainly greatly strengthened when they are considered together, since it is reasonably certain that they could not have any other common acting lesion.

Broca's center and the left motor area of the cortex are supplied with blood from the inferior external frontal and the ascending frontal branches of the left middle cerebral artery. They have a common point of origin, and sometimes the inferior external arises from the ascending frontal. An embolus at that point would cut off the arterial circulation to both areas and thereby arrest the function of each at the same time. Apparently this is just what occurred to our patient.

As to the source of the embolism I am in the dark. Dr. Theodore Potter at one time saw the case with me, and we were unable to find any disease of the heart or blood-vessel leading toward the brain.

The progress toward recovery in such cases is given as follows: 1. Return of speech. 2. Motion in the leg, beginning with the toes and foot. 3. Motion of upper arm. 4. Motions of fingers and hand. Precisely just this course was taken in the case reported.

The circulation to the center of Broca, was probably reëstablished, first partially, and secondly quite completely, by release of that arterial branch from the obstruction. Collateral circulation seems to be taking place in the motor area. The arrangement of the arterial blood-vessels in this part of the brain would favor its establishment in the order already named, and thus explain the steps toward recovery. Whether this patient will regain perfect use of his limbs is a matter of some doubt. That he will, at least, have fair use of them is already assured.

Beside the strictly motor character of the one-sided paralysis and the loss of speech, in this case, there are several other accompanying interesting points to be noted.

Because of the favorable arrangement of the vessels, the left middle cerebral artery is the favorite seat of an embolism—another argument in favor of the diagnosis in this particular case.

The interrupted or wavy character of the trouble at its incipiency may be accounted for on the theory that the arterial plug had not yet become so fixed or wedged in its position as to prevent, when it changed its location, the flow of enough blood to the areas to nourish them during the intervals of return of speech and motion.

It has been noticed all along that such acts as yawning or stretching produced marked feelings of motion in the paralyzed limbs. Gowers explains this on the ground of associated movements. A distinct effort to do something with the unaffected hand or foot causes a similar effort in the corresponding paralyzed limb.

The retention of urine for a time I attributed to the shock the brain received, and to the recumbent position he was required to maintain.

The treatment for the first few weeks was light doses of bromid of potash, care in diet and absolute quiet. Later he was given iodid of potash in doses of 5 to 7.5 grains, three times a day for several weeks.

Recently there has been very little medication. The use of the faradic current and massage were begun at proper time and are still being kept up.

18 East Ohio Street.

DISCUSSION.

DR. F. W. LANGDON.—This paper is one of considerable interest and brings up questions that we frequently have to decide as to the location of a lesion and the ultimate prognosis of the case. Being a young man the prognosis is of much more importance than if it was a more or less senile patient, and I think those cases require really much more care on account of the different conditions which prevail in the two classes of patients, the young and the old. The Doctor says the patient is thirty-five, and probably by reason of not reading the full paper we are not informed as to whether there were other lesions which might contribute very materially to a more exact diagnosis, as for instance a preceding rheumatism leaving an endocardial condition which might be the source of an embolus which the Doctor has assumed affects the middle cerebral artery. Other conditions which might produce a cortical lesion would be syphilitic endarteritis with thrombus resulting. In the absence of definite history in these respects, I would say that while the Doctor's diagnosis is quite definite as regards the side of the brain affected, I should be inclined to consider the possibility if not the probability of the lesions being sub-cortical rather than cortical. We have an involvement of areas which, if the lesion was cortical, could hardly fail to be attended by marked mental impairment, by convulsions and active symptoms of cortical irritation at the start, which, if I understand aright, were absent. Again, there are apt to be meningeal symptoms following a cortical lesion if there be a hemorrhage. I should be inclined to exclude the cortical lesion in this case. A sub-cortical lesion can be considered of a very limited character. There may be rupture of a blood-vessel or a thrombus, with small irritation. The suddenness of the attack might exclude a thrombus, but while it might favor the embolic theory, the embolus must be very small. It would seem as if the symptoms must be accounted for by an exceedingly limited involvement in the area of the internal capsule.

WAS HAHNEMANN INSANE?

Read in the Section on Neurology and Medical Jurisprudence, at the Forty-sixth Annual Meeting of the American Medical Association, at Baltimore, Md., May 7-10, 1895.

BY W. W. PARKER, M.D.

RICHMOND, VA.

Nothing but a high sense of public duty will justify a man in attempting to prove another insane, it matters not whether he be dead or alive. The great leading men of the past belong to their posterity. They are valuable lessons to the young, both as warnings against evils and incentives to duty. Biography has always been interesting to me. When nine years old I had read "Plutarch's Lives" more than once. From this kind of study we select our ideals. For this reason the Bible is an invaluable book; it presents us with so many noble ideals on all great moral questions. Some three years ago I read a pamphlet on "The Rise and Decline of Homeopathy," before our State Society, which has had quite a wide circulation. Last year I had a newspaper discussion with the homeopathists of Richmond. Each fired a gun and retired from the field. These things have caused me to study more closely Hahnemann's character, and his unique dogmas. The hot and cold water cures had some common sense in them, but were narrow and on the one-idea theory. Homeopathy, as I

stated in my essay, is transcendentalism; it is not physics, but metaphysics. Hahnemann was a hard student, honest doubtless, and a lover of his kind. His character is above reproach; he was in no sense a quack. His insanity was of a "delusionary" character, well known to alienists. Dr. Young would have called him "a dreamer of gay dreams." True, medicine is practical. We speak of it "as the practice of medicine," not the theory of medicine. Some men are even pleased to call medicine an "art" and not a "science." Too much theory has been the bane of practice. Medicine began with experimentation. However carefully made, experiments must yet be received with great caution. There should be great care also in generalizing from doubtful premises. This error has caused the world much sorrow. We have only to read the numerous pamphlets circulated through the mails to-day with hundreds of certificates of medical men of the marvelous effect of some new drug, to be satisfied that the day of hasty conclusions has by no means passed.

Hahnemann was a singular man. He practiced medicine twenty-eight years and changed his residence twenty-three times. He must have been an unsuccessful practitioner. Perhaps he did not stay long enough in one place for his infinitesimal doses to do their work. By his method it would take a year or two to get one drop of laudanum into his patient's system. A delusion is perverted idea on any subject. It is a very common form of insanity. Some years ago I met a lady at McBride's Private Hospital in Philadelphia, who took me to a door leading into an adjoining room, and said her husband was nailed up in the door casing. I did not attempt to argue with her, as I saw at once she had lost her reason. Hahnemann's "delusion" was on the subject of numbers and forces. He had lost the relation of weight and measures, of little and big, of great and small, of dynamics and statics. To say the smaller the dose—the nearer it was to nothing—the greater its effect, if given in infinitesimal doses, is absurd upon its face, to a man of common sense; to say that only a billionth drop if given every ten minutes will have a better and more certain effect than if given in one drop doses, two or three times a day, is gratuitous; besides, there can be no way possible of proving the proposition. The only way to convince a man holding these absurd views is to satirize him. This Hood and Holmes and others have done:

Well, Doctor,
Great concoctor
Of medicines to help in man's distress;
Diluting the strong to weak
And making ev'n the weak more weak,
"Fine by degrees, and beautifully less."

Suppose a felon doomed to swing
Within a rope,
Might friends not hope
To cure him with a string?
Suppose his breath arrived at a full stop
The shades of death in a black cloud before him,
Would a quintillionth dose of the New Drop
Restore him?

But would it mend his case
To be decillionth dosed
With something like the ghost
Of an emetic!

What shall support the body in its trial,
Cool the hot blood, wild dream, and parching skin,
And tame the raging malady within—
A sniff of Next-to-Nothing in a phial?

Dr. Oliver Wendell Holmes has also satirized him. I do not remember whether the following is from him or some other American poet:

Take a little rum,
The less you take the better,
Pour it in the lakes of Wenner and of Wetter,
Dip a spoonful out,
Mind you don't get groggy,
Pour it in the lake of Winipisiogee,
Shake the mixture well—
Lest it prove inferior,
Then put half a drop
Into Lake Superior.

Every now and then
Take half a drop in water;
If not better soon,
At least you ought to.

What is insanity? An expert says: "It is a delusion or a false concept, an idea which is the product of defective data and defective reasoning and held in spite of the presentation of corrected data and corrected reasoning. This distinguishes it from a common delusion, an error of belief remediable by suitably put evidence." A more simple definition it seems to me would be this: A perverted understanding habitually, though not necessarily at all times, or on all subjects or objects, ignoring common sense and observation, and the plainest relations between cause and effect. The delusion may be upon one subject only.

Were I to see a man driving a nail in the fence and find him tapping it with great delicacy for two or three hours, and were I to say to him, "give the nail two or three vigorous blows and you will do the work," and were he to reply, "this is the best plan, I am satisfied of it," I would at once consider he was insane. Were I to find a man watering his garden with a small watering-pot and only putting one or two drops on each plant, and I should urge him that he was not half doing the work, and he should reply, "the smaller the quantity the better," I would be certain he had lost his reason. Or were a man to claim that two pounds of guano to the acre was better than one ton, I would conclude he was insane. These men might be sound on plowing and cultivating their crops, but certainly unsound upon the quantity of water and guano. If a man were to tell me he was going to London and say that he had but five dollars, and that was enough, I would say at once he was crazy. To say in physics that the nearer you get to nothing, the greater will be the effect and power, is to state an absurdity on its face. Hahnemann said that the nearer you got to the "spiritual" or non-visible or non-ponderable, the greater the power of the drug on the sick man. Is it possible for any man to propound a more absurd proposition in physics? The argumentum ad absurdum is the only mode of replying to such reasoning. Hahnemann had perhaps seen too much physic used, and concluded if he could by some gentle process carefully insinuate his medicine imperceptably into the system it would less disturb the economy and have better results.

The human body is a strong, well-built machine, enduring great strain and fatigue, and is affected like all other machines by physical agents. We know that one drop of castor oil will not purge, while one ounce will; that one drop of ipecac will not vomit, but two drams will. If we want to produce effects we give what we know from trial will produce results in a reasonable time. This is plain, common sense. We know that the germ of smallpox is very minute,

but we have proof positive that in six or eight days it brings on fever. This is demonstration. Under the system of Hahnemann this sort of proof is impossible. His mode of "testing," as he calls it, is not proof. Its effects are too remote and vague. In the present wild search after germs some may think we have proof of the potency of small forces; but Hahnemann ignored pathology, nor did he seem to inquire into the cause of disease. He said, "If you put liquid medicine in a well-stopped bottle and shake it violently for a while, the patient will feel the effect of the drug on his system." No shaking of the bacillus could get it through the glass bottle into the patient's system. Many germs act quickly and powerfully. If it were necessary, I could easily prove that most homeopathic writers and journals have long since abandoned Hahnemann's wild theories. The homeopathic doctors now give real medicine. A druggist in town has a recipe from one of them for five grains of quinin and one-fourth of a grain of opium, but in the use of medicine for family purposes, put up by the New York Drug Company, authorized by the leading homeopathists, there is no medicine in it worthy of the name. A dose of these pills is from two to four, as a rule. I gave to a man as an experiment forty every two hours for ten days without the least effect. I gave what was known as the most active and energetic poisons. The man swore before a notary public he never felt the slightest effect of the medicine, and the truth of his statement was verified by the temperature and pulse, taken every two hours. Had Hahnemann's disciples adhered to his dogmas his school would have long since died out here as it has in Germany and France. (It is now dying out in England.) Common sense had to assert itself. An English homeopathic journal some time ago proposed the union of the two schools, and frankly asserted that no serious case was attended throughout by homeopathists without resort to drugs. I referred in my pamphlet to a 3-year-old child in Gloucester County, Virginia, who took $8 worth of homeopathic medicine, the entire supply for the whole family for a year, at one time, and received no damage at all. This is another demonstration of the complete inertness of the medicine. There was no cause of disturbance, hence there was no effect.

In conclusion let me say that I am 71 years old, am the friend of all men engaged in the healing art, more so than ever in my life; that I would not willingly hurt any man's feelings or insult his understanding; my whole purpose is to get at what is sound and sensible in physic. We know but little perfectly. I do not remember in my life to have heard any sensible doctor boast of the perfection of his medical knowledge. That was a sad saying of Paul's to his enemies, whom he truly loved and tried to help, "Do I offend you because I tell you the truth?" Would it be just and right to tell you a lie and mislead you? Two years ago, by authority of the Governor of Virginia, I visited all the lunatic asylums in the state at the head of a commission, and can frankly say that in my best judgment, of the 2,000 lunatics examined I did not see one man more lost to reason (in medicine) than Samuel Christian Friedrich Hahnemann. I see it has been proposed to build a monument to him on American soil, and would I be true to my convictions to hold my peace? In no sense is insanity a crime; it is a sad misfortune, exciting our profoundest sympathy.

CHRONIC MIDDLE EAR SUPPURATION COMPLICATED WITH SUPPURATING MASTOIDITIS.

PAINFUL DRESSING AFTER OPERATION UNDER HYPNOTIC SUGGESTION.

Read in the Section on Neurology and Medical Jurisprudence, at the Forty-sixth Annual Meeting of the American Medical Association, at Baltimore, Md., May 7–10, 1895.

BY FRANK C. TODD, M.D.

FORT WORTH, TEXAS.

Jessie C., aged 10, was brought to me by her father with the following history: Chronic middle ear suppuration for three years, complicated by a suppurating mastoiditis on either side which had been discharging through large ragged fistulæ. The discharge was profuse, and the child had been obliged to wear a bandage around her head constantly.

The character and chronicity of the affection had caused the child to be very fretful and impatient, though she was not in the least hysterical; and her parents, who were very sympathetic, had humored her to such an extent that she was indeed a spoiled child. The father informed me also that their family physician, who had been directing a cleansing treatment, had been unable to exercise any control over her whatever. Every time he attempted to do anything the child would cry and say she would not let him touch her; whereupon he would give up the attempt and let her go in the same condition as he had found her.

I therefore recognized that I had a very refractory patient to deal with, and I thought that the management of the disease was not going to be the hardest part of the treatment.

And the first day I found that she came to me with the intention of dealing with me as she had so successfully dealt with my predecessor. It was with some difficulty that I succeeded in making any examination this first day, but I purposely took only a superficial survey on this occasion, finishing my entire exploration only after several visits; making her believe, however, at the end of each séance, that I had done all I desired to. Occasionally I had to inflict discomfort or pain upon her, but before doing so I always informed her that there was to be some pain, and when she objected I reminded her of former incidents when I had finally accomplished my purpose in spite of her remonstrances, after which reminder she would allow me to do as I chose. However, up to the time of the first dressing, two days after performing a mastoid operation I had given her little pain, and I had realized in the beginning that when it became necessary to unpack a tightly packed, fresh granulating wound, irrigate, and repack again with gauze, there was going to be considerable pain and much more trouble. It was with this painful treatment in view that I had spent so much time in training my patient to my subjection.

She had fought against the administration of the chloroform preparatory for the operation, and this had aroused in her the old spirit of obstinacy, so that when we got her on the table and things had been made ready for the dressing, we found that we were going to have more than we could do to hold her and accomplish our object. The two female nurses were unable to keep her still, either by mental or physical persuasion; she threw her arms about and kicked fiercely. I could not coax her and she knew that I could not hold her and dress her wound at the same

time, so she resolved to have her own way. But when she saw me come toward her with the evident intention of compelling her to obey, she seemed to lose heart, though she continued to scream loudly and apparently resisted all she thought she could.

I placed my left hand on her forehead and passed my right arm over her body, inclosing her arms, and laid her flat on her back, where I held her as in a vice. I then said, "You can not move; you are fastened down." Seeing that her attempts were feeble, I released my hold and repeated the suggestion. This time there was not even an attempt, and she lay as I held her, but continued to scream. I then said: "Stop crying." She obeyed instantly. Again, I said: "You can not move nor cry, no matter how hard you try." She did neither, while I took time to prepare my hands again and to make a thorough dressing. After I had completed I told her to sit up, as I had finished, which she did immediately. I had told her also that she would feel no pain, and she said afterward that there was none, though the next time I dressed the case, when there would normally have been less, she complained a great deal; this time however it was not necessary to hypnotize her.

This case demonstrates Moll's statement that disobedient people, when hypnotized, are often the easiest to manage.

I have purposely made prominent the fact that this patient was brought under control against her desire and in opposition to her strongest efforts. This is somewhat different from any of the cases you mentioned in your recent article—nevertheless an exemplification of your claim that some people can sometimes be hypnotized against their will.

THE NEURON IN MEDICINE.

Delivered before the Tri-State Medical Society held in Des Moines, Iowa, Oct. 1, 2 and 3, 1895.

BY SANGER BROWN, M.D.
CHICAGO.

Some experience in post-graduate teaching has convinced me that the rank and file of the profession pretty generally believe that neurology consists mainly of an intricate tissue of technicalities which only neurologists can understand, if, indeed, the subject is not past all understanding. It ought to be said that this remark applies more properly to students who passed through college, say, prior to seven or eight years ago than to those who are now passing through; because the science has now advanced so far that much of what before was speculation and hypothesis is now susceptible of demonstration, and both student and teacher have shown a correspondingly increased interest. This has been all the greater, because as the science has unfolded, its importance in medicine has been more and more recognized and appreciated.

It is the purpose of this paper not to trace the science of neurology, step by step, from its humble origin to its present eminence, but simply to direct attention to one feature of comparatively recent development which has gone a great way toward facilitating a clear view regarding the etiology, the pathology and treatment of diseases of the nervous system. This feature consists in conceiving the nervous system to be composed of an aggregation of units very similar in character, and in the thorough study of these units.

It is important at the outset to have a name which shall appropriately designate this entire unit, and I have adopted Waldyer's term of neuron to which, however Prof. Schäfer of London, objects; and while his reasons for putting forth a nomenclature of his own are sound, I think Waldyer's term is so familiar and its application so readily understood and accepted that it will come into universal use.

Improved methods of staining, together with close application and great natural aptitude on the part of several students, have resulted in demonstrations which have added much to our knowledge of the neuron.

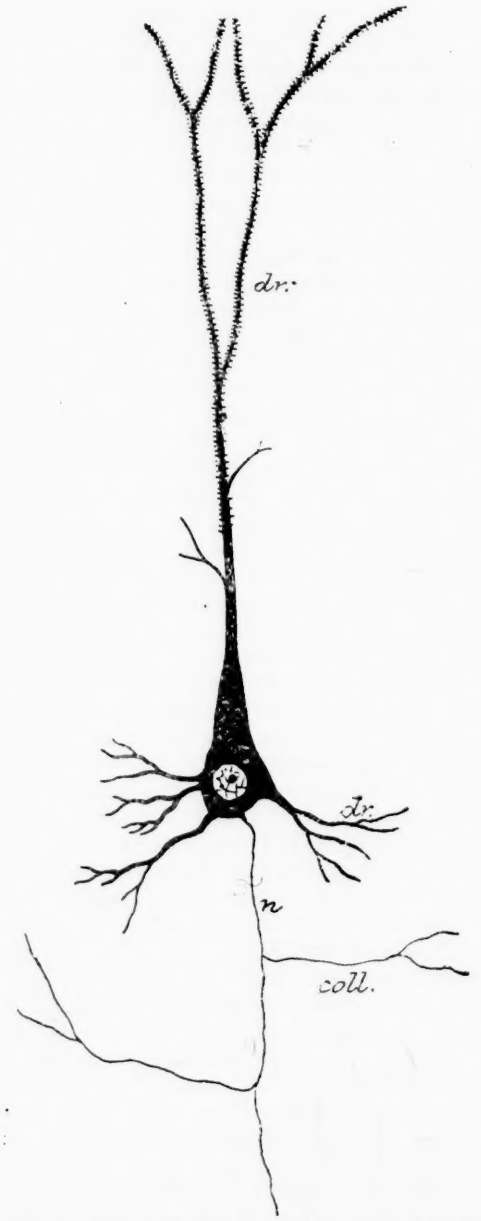

Fig. 1. A projection cell of the cerebral cortex (Schäfer); *dr*, protoplasmic processes; *n*, axis-cylinder process; *coll.*, branch of axis-cylinder process.

Fig. 1, which represents a cell, the body of which is situated in the motor area of the cerebral cortex, may be taken as an illustration of the neuron. It will be seen to consist of a cell body and two processes. The cell body is seen to contain a prominent nucleus which is large in proportion to the cell body, and the size of both generally bears a distinct relation to the length of the processes which emanate

therefrom. It may be observed here that the nucleus always bears a conspicuous nucleolus.

The processes emanating from the cell body are of two kinds, which are characterized by different names and are certainly quite different in appearance and probably in function. The first and only essential kind is the axis-cylinder process. The other is designated the protoplasmic process and is not essential because many nerve cells are entirely destitute of it.

The axis-cylinder process consists of a long and slender fibril which does not diminish much in size as it proceeds and, after extending from a fraction of an inch to several feet, ends in a terminal arborization. This arborization may either connect with an ultimate muscular, sensory or glandular element or with another neuron; of this latter connection more remains to be said. Contrary to former teaching these processes have branches, called collaterals, which are given off nearly at right angles and probably end in arborizations connecting them with other neurons.

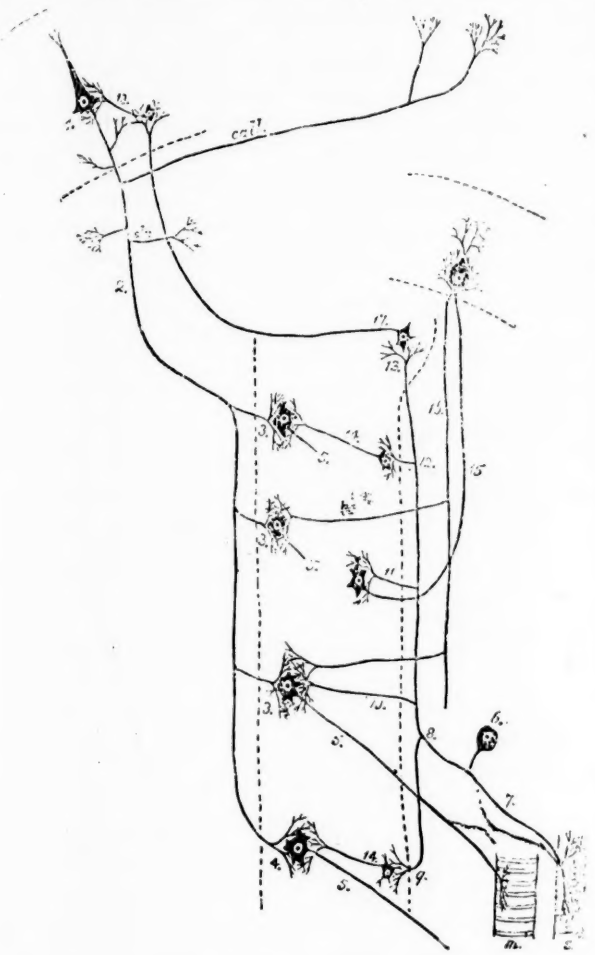

Fig. 2.—Diagram showing the probable relations of some of the principal cells (neurons) of the cerebro-spinal system to one another (after Schäfer). 1, body of a neuron of the cortex cerebri; 2, its axis-cylinder process passing down in the pyramidal tract and giving off branches, some of which, 3, 3, end in arborizations around the bodies of other neurons in the anterior horn of the spinal cord, the main fiber having a similar ending at 4; *coll.*, a branch passing in the corpus callosum to the cortex of the opposite side; *str.*, a branch passing into the corpus striatum; 5, axis-cylinder process of peripheral neuron in anterior horn passing to form a terminal arborization in the end-plate of a muscle fiber, *m;* 6, body of neuron of one of the spinal ganglia. Its axis-cylinder process bifurcates and one branch, 7, passes to the periphery to end in an arborization in the sensory surface, *s*. The other branch bifurcates after enteringthe cord (at 8) and its divisions pass upward and downward (the latter for a short distance only); 9, ending of the descending branch in a terminal arborization around the body of a neuron of the posterior horn, the axis-cylinder of which again ends in a similar arborization around the body of a neuron of the anterior horn; 10, a branch passing from the ascending division directly to envelop the body of a neuron of the anterior horn; 11, one passing to envelop the body of a neuron of Clarke's column; 12, a branch having connections like those of 9; 13, ending of the ascending division of the axis-cylinder process emanating from 6 around one of the bodies of the neurons of the posterior columns of the bulb; 14, 14, axis-cylinder process of the neurons of the posterior horns passing from an arborization around the bodies of the motor neurons; 15, an axis-cylinder process of the ascending cerebellar tract passing up to form an arborization around the body of a neuron of the cerebellum; 16, axis-cylinder process of this neuron passing down the bulb and cord and giving off branches to envelop the bodies of the neurons of the anterior horns; 17, axis-cylinder process of the neurons of the posterior columns of the bulb passing to the cerebrum and forming a terminal arborization around one of the smaller cerebral neurons, which may be regarded as an intermediary neuron; 18, axis-cylinder process of this cell, forming an arborization around the central projection, neuron 1.

The protoplasmic process is always comparatively short, has a rough outline, begins to branch close to the body of the neuron and the branches are given off at an acute angle so that the identity of the original fiber is soon lost in the smaller branches.

Though generally the body of a motor neuron is larger than that of a sensory neuron, the neurons of the cerebro-spinal axis have not recently been classified according to this difference; they have been classified, however, according to the number and length of the axis-cylinder processes. Neurons with long axis-cylinder processes, whether motor or sensory, are termed projection cells or neurons, while those with short axis-cylinder processes are called intermediary cells or neurons.

In Fig. 2, 6 and its process is a sensory projection-neuron, and so is 17, but 18 is an intermediary neuron, because it may be regarded as an intermediary link between the centripetal or sensory impressions brought to a nerve center by sensory neurons and the motor or centrifugal impressions which must proceed along 1, 2, 3 and 5, the motor projection cells or neurons.

Fig. 3.—A neuron from the superficial layer of the cerebral cortex (after R. y Cagal). *n*, *n*, axis-cylinder processes; *dr*, *dr*, protoplasmic processes.

Continuity of fibers ever so fine have never been observed forming a connection between two neurons. Such a connection must be regarded as a physiologic one and takes place by the adjunction of the arborized process of one neuron with the body of another neuron, or by the adjunction and interlacement of the arborized process of one neuron with a similar process of another neuron, as may be observed in the olfactory glomerule shown in Fig. 4. Indeed, the gray matter in which the bodies of the neurons lie imbedded is doubtless made up of the interlaced fibrils forming the arborizations above described. In cutting through the gray matter numerous points are seen, resulting from a cross section of the fibers comprising these arborizations; hence the Germans have designated it the punkt substance, and refer to it as a highly important part of the nervous system which, indeed it is, since in it a nervous impulse may be transferred from one neuron to another.

It is a general law applicable to every cell that when any part of it is separated from the nucleus that part dies. This applies to the neuron and is not affected by the direction in which impulses traverse the part separated, say the axis-cylinder process. Right at this point, I wish to insist upon the importance of regarding the neuron with all its processes

simply as a cell, no matter how widely it may differ in various respects from the current conception of a cell. When it is remembered that it is the function of the cell nucleus to preside over the nutrition of the cell processes, it can be readily understood how slight a cause affecting the nutrition of this nucleus might affect profoundly the nutrition of the delicate axis-cylinder process at a distance of several feet from its nutritive center.

Though I shall return to it again, I may here call attention, by way of parenthesis, to the probability that lead palsy and diphtheritic paralysis are respectively due to the action of a mineral poison in the one case and a bacterial toxin in the other acting upon the nucleus of the nerve cell.

The essential function of the axis-cylinder process is conduction of nervous impulses. It is pretty evident that in some cases this impulse passes through the body of the neuron, as, for instance, where two axis-cylinder processes emanate from its opposite sides as shown in Fig. 3. But it is no less probable that a nerve impulse may be transmitted the whole length of the axis-cylinder process without traversing the cell body, as may be understood by reference to the neuron 7, 6, 13 in Fig. 2. Indeed, experiments

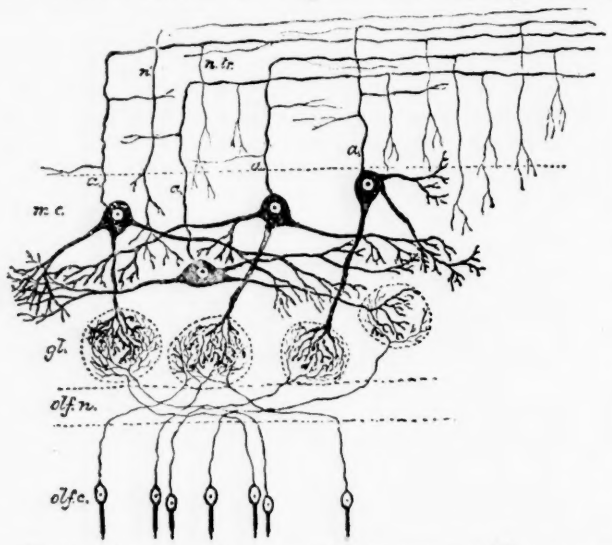

Fig. 4.—Diagram of the connections between the olfactory sense organs and the brain (Schäfer). *Olf. c*, olfactory neurons sending their axis-cylinder processes, *olf. n*, into the olfactory glomeruli, *gl*; *m, c*, "mitral" neurons of olfactory bulb sending axis-cylinder processes into the glomeruli and axis-cylinder processes, *a, a*, into the olfactory tract, *n, n'; n*¹, an axis-cylinder process derived from a cerebral neuron ending in the olfactory bulb.

made on the higher vertebrates might be cited strongly confirmatory of this view, while it seems certain that in the earthworm, sensory impulses are brought from the skin to the central nervous system where they are converted into motor impulses without traversing the nucleated body of a neuron at all as shown in Fig. 5.

The view that the nucleated body of a neuron may act as an automatic generator of nerve impulse is very commonly entertained, though direct proof of it is lacking. The so-called automatic action of the respiratory centers in the medulla can not fairly be taken as proof, for this is known to depend upon the circulation through the medulla oblongata of venous blood.[1]

[1] For many valuable and interesting facts regarding nerve impulses, and much else of interest regarding the neuron, I refer to the admirable address of Prof. E. A. Schaefer, F.R.S., as President of the London Neurological Society, to which I am much indebted for many of the statements herein made. (See "The Nerve Cell Considered as the Basis of Neurology," by E. A. Schaefer, F.R.S., Brain, vol. XVI.)

Though the service which this conception of the neuron renders to psychology can not be regarded as inferior to that which it yields to neurology, I can not at this time consider it in relation to mental operations; but keeping in view the statements already made, I wish to make some practical applications of it to the subject of neurology and will in the first place call attention to a few well-known facts regarding reflex action.

The motor path, from the so-called motor region of the brain to the motor end organs, consists of two neurons or segments, an upper or central neuron and a lower or peripheral neuron. The body of the central neuron is in the brain. The body of the peripheral neuron in the spinal cord, hence the term central or peripheral disease, should refer to the central or peripheral neuron, notwithstanding the central neuron is partly in the brain and partly in the cord, and the peripheral neuron is partly in the cord and partly in the peripheral nerve.

When a movement results from the direct action of the lower or peripheral sensory neuron upon the

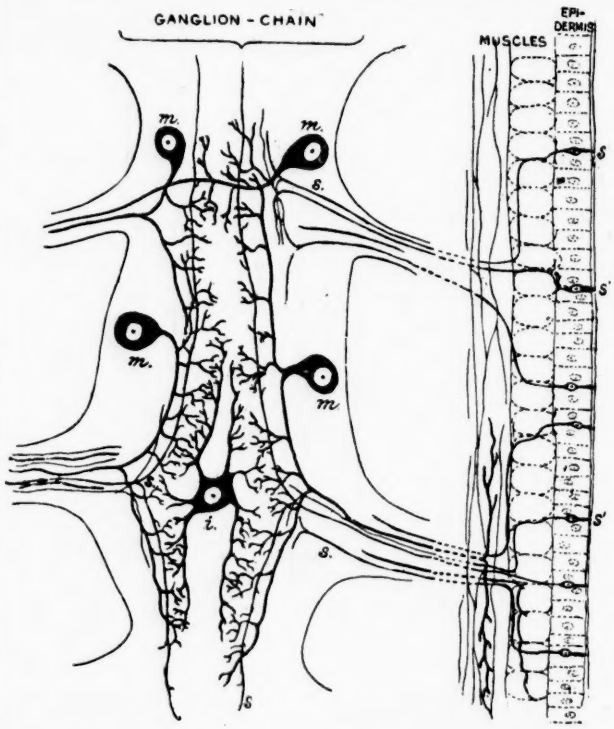

Fig. 5.—Diagram of the nervous system of Lumbricus (after Lenhossék and Retzius); *m*, motor neuron; *i*, intermediary neuron; *s*, sensory axis-cylinder processes proceeding from *s'*, sensory neurons in the epidermis.

lower or peripheral motor neuron, such movement is designated by the term reflex; on the other hand, when a movement results from the action of the upper or central sensory neuron upon the upper or central motor neuron, such movement is designated as voluntary, whether conscious or not. In health, the upper or central motor neuron or segment has a marked inhibitory influence over the lower or peripheral motor neuron or segment. Therefore, when the influence of the upper motor neuron or segment is impaired or destroyed by disease, if the reflex arc remain intact the reflexes will be increased. I might explain that by the reflex arc I mean the path which is taken by an impression made upon a sensory apparatus along a peripheral sensory neuron directly to a peripheral motor neuron, and thus outward to a motor mechan-

ism as illustrated by Fig. 2. 7, 3, 5. Disease in any part of this arc will impair or destroy the corresponding reflex.

Before proceeding to apply the facts for purposes diagnostic, it should be stated that the upper segment or central neuron is never connected directly with any end organ, but always with a second neuron; and also that the nucleus of the lower motor segment or peripheral neuron presides over the nutrition of the muscle to which it is distributed. It only remains now to enumerate those pathologic processes which commonly affect these several segments, and first the upper or central motor neuron or segment 1, 2, 3 may be considered in Fig. 2. In the main the processes are traumatism, hemorrhage, embolus or thrombus, tumor, abscess and lateral sclerosis; excepting during the period of severe shock the symptoms due to injury of this neuron would be paralysis and increased reflexes without atrophy; and to this might be added spasm in case of an irritating lesion as a gumma. So far as the ultimate symptoms are concerned, it makes no difference to what part of the neuron the destructive agency is applied.

Next, we will consider some of the pathologic processes which affect the lower or peripheral motor neuron, 5 in Fig. 2. They are acute or chronic inflammation of the cell body in the anterior horn of the spinal cord and also the action of metallic poisons or microbic toxins upon it, transverse myelitis, peripheral neuritis and trauma. The symptoms due to disease affecting this neuron are paralysis, muscular atrophy and loss of the reflexes.

A pathologic process affecting the upper or central sensory neuron, 17 in Fig. 2, would affect sensation but would have no influence over the reflexes. With the exception of chronic degenerative change the same processes as were enumerated as affecting the upper or central motor neuron may affect this one, though the course of its axis-cylinder processes nor the position of the bodies are not so definitely known.

Lastly, the lower or peripheal sensory neuron, 13, 8, 6, 7 in Fig. 2, may suffer in the part of the axis-cylinder above the cell body in the cord from the effects of acute inflammation as in transverse myelitis, and from degeneration as in locomotor ataxy; below the cell body from inflammation (neuritis) or traumatism. If the lesion involve that part of the neuron which serves to form part of the reflex arc, then in addition to lost or impaired sensation there will be lost or impaired reflexes. Where a lesion involves several neurons with different functions the symptoms will be correspondingly combined, excepting of course where the lower segments are involved; there is then no way of interrogating the upper segments.

It remains to apply this conception to diseases affecting the cerebellum and the sympathetic system. While I do not underestimate the importance of these parts of the nervous system, a sufficient number of definite anatomic and physiologic facts have not yet accumulated to render such an attempted application feasible. I can not refrain, however, from calling attention to a very ingenious not to say useful hypothesis which has been recently put forward by Profs. Lepine and Duval, of Paris, and which, from the conception of the neuron, affords a rational explanation of the organic basis for various so-called functional manifestations of the nervous system. Everyone is familiar with the so-called amœbic movements of cells, and by assuming that, by reason of such movements the contiguity which one neuron bears to another and which is essential to the transference of an impulse is so far broken that such transference does not take place, various phenomena are accounted for; thus in sound sleep such contraction and separation of neurons may be regarded as very general and complete; the upper neurons being almost completely isolated from the lower; while in light dozing and somnambulism a greater or less connection of varying character may be supposed to remain. In simple insomnia, from some obscure nutritive defect, this spontaneous contraction which causes the separation, producing normal sleep, does not occur or may not long enough continue and, similarly, in hysterical paralysis with its sudden recoveries, these amœboid movements or their absence will explain pretty well the phenomena.

It may be supposed that in a normal individual the request to rise from a chair and walk would cause a sufficiently strong impression upon the neurons of the brain ordinarily concerned in mental operations to cause their processes to elongate, and so bring them into such physiologic relation with the lower segment as would set in operation such muscles as might be necessary to the proper performance of the movement, while in a person affected with hysteria such elongation might not occur and hysterical paralysis would be present.

But suppose in this latter case an unusual stimulus be applied to the upper segment or neuron, such as an ignorant, credulous and superstitious person might be conceived to obtain at the hands of a so-called miracle-worker, then the necessary contiguity might result and thus a miraculous cure be effected; inasmuch, however, as according to this hypothesis the paralysis depended primarily upon a defect in the upper or central neuron, it might be expected that such a cure would not be permanent, and experience amply justifies this expectation, for we know full well how frequently recovery from hysterical paralysis is followed by relapse.

I can not at this stage discuss at length the bearing that this conception has upon the pathology of the nervous system, but will cite a few instances where, in my opinion, it is conducive to clearness of view.

In the toxic palsies, unattended with pain, it seems much more reasonable to assume that the poison acts on the body of the neuron than that it has a selective influence for the peripheral part only of the axis-cylinder process. It is at all events manifestly improper to designate these processes by the term neuritis, for none of the characteristics of inflammation attend the process, as pain, heat and swelling. According to this conception it is not fair to assume that the primary lesion in locomotor ataxia consists of disease of the nerve fibers, for in that case it must be maintained that the axis cylinder on one side of and near to its nutrive center degenerates, while that on the other remains comparatively healthy, which is unreasonable. Therefore, the view already held by many that the disease begins in the adventitious tissue and involves the nervous element subsequently finds strong confirmation in this conception.

Recent demonstrations and hypotheses concerning the neuron have done much to render therapeutic measures more rational, if they have not yet developed anything new. For instance, it can be under-

stood how a drug, by causing contraction of the sensory neurons, might abolish pain and even produce artificial sleep. In this connection opium, chloroform, etc., might be mentioned.

In the so-called toxic palsies, whether the toxin is supposed to act more intensely upon the part of the axis cylinder that degenerates or upon the body of neuron is not material, the therapeutic problem is the same, namely, to prevent the further formation or introduction of the substance into the system and promote the elimination of that already present.

If it is a fact that locomotor ataxia begins as a proliferation of the connective tissue in the spinal cord and affects the nervous elements secondarily, then direct stimulation to the spinal cord by means of electricity, with a view of promoting the nutrition of the defective tissues and thus their return to health, is an eminently rational process. Enough cases have been reported where strong galvanic currents to the spine have produced a myelitis, to make it certain that a proper degree of stimulation may in this way be applied. So that recent researches tend to support the assertion made some time ago by my distinguished colleague, Dr. Dr R. Brower, at the International Medical Congress held in Copenhagen, that the he had treated cases of locomotor ataxia successfully by the application of strong galvanic currents to the spine, although when he made it it was received in some quarters with considerable skepticism. Though some effort may be required on the part of those who learned their neurology before these demonstrations and hypotheses were brought forward to recast their conceptions in accordance with the new order of things, I think whoever makes the attempt will be amply repaid, and, so far from finding his work obscure and unsatisfactory, will find it fairly clear and interesting.

THE VALUE OF SHARP CURETTES IN THE REMOVAL OF SEPTAL PROJECTIONS.

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Many and various are the mechanical plans and devices for the treatment of cartilaginous and bony projections from the nasal septum. Not unnaturally, for the great influence which these conditions have upon the pathology of the nose is a matter of such positive scientific acceptation, that inventive genius in this particular is properly stimulated.

While within the short compass of a paper one could not be expected to give a complete review of the various instruments, it may be well in connection with the subject of the paper to glance at the more important instruments devised for the removal of septal projections, ridges, spurs, and the like. The literature of this subject is very striking, in one particular especially; viz., that deflections of the septum and exostoses and ecchondroses growing from the septum are considered by most writers as if they were identical conditions. They have many points in common; their pathology, however, is unlike; at least no one seems to have fully solved the problem of their relationship. Their treatment is so manifestly different that much confusion, at least to the inexperienced, would be obviated if the two conditions were considered under different headings. For this reason septal deflections are ignored in this paper and reference is made to the treatment of spurs and ridges alone.

MacDonald[1] advises a linear incision over the projection, followed by turning up the perichondrium with a raspatory, and removal of the superabundant cartilage with a saw or gouge. He considers a trephine preferable for the removal of small spurs. It is undoubtedly true that it is better to remove these small spurs with a trephine than by the means advocated by MacDonald; there are, however, certainly more satisfactory instruments for this purpose than the trephine.

The same author recommends certain forms of gouges which act in a somewhat similar way to the instrument about to be described in this article. A double set (right-sided and left-sided) is required—a decided disadvantage. These gouges are of service, yet they are manifestly unequal to the sharp curettes in strength, simplicity and accuracy of operations.

The practice which Jarvis[2] recommends, of transfixion and snaring, is not readily applicable to many cases, and when it is used the operation is needlessly prolonged.

Seiler's dental engine[3] and Curtis' electro motor[4] have accomplished much in making the removal of septal projections a matter of little difficulty and technique. Some cases, however, do not admit of this form of operation; in addition many rough places frequently remain upon the septum, however careful the operator may be. To this fact numerous writers have testified. In this connection it may be well to mention that Jarvis[5] insists that nasal drills should be used with great circumspection. No instrument which operates like these drills and trephines can be expected to leave a smooth surface where tissue is no denser than that of septal projections. If the spur or ridge were as hard as the teeth, it would be a different proposition; then such instruments would be ideal as they are in dental work. To clear away the rough places remaining after these operations, the instruments presented by the writer are very pleasing, so that by using the motor first, and the sharp curettes afterward, a most perfect result may be obtained.

Seiler advocates a method not very different from that of MacDonald. He cuts away the mucous membrane and then with a gouge and mallet removes the projection. Cheval[6] mentions a gouge with a handle at 90 degrees to the shaft, which he considers useful to trim down projections. The handle being at right angles there is no interference to the view.

The most serviceable instrument in the great majority of cases is the saw devised and popularized by Bosworth.[7] With it the operation may be most expeditiously performed, a smooth surface almost invariably remains and healing is rapid.

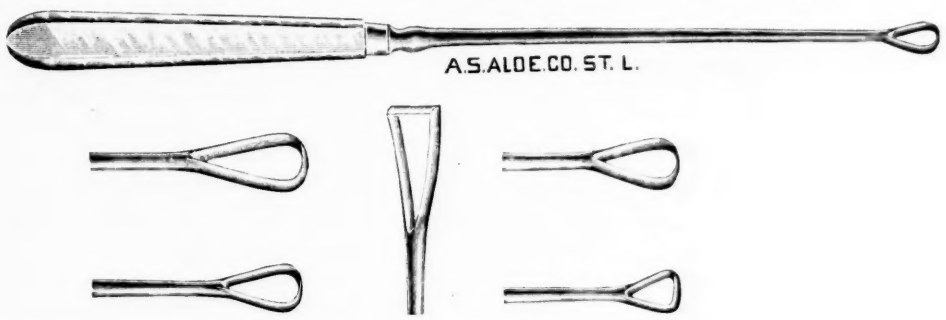
There are, however, many projections from the septum for which from their very nature saws are not applicable. Many present too obtuse an angle to the septum, while others are too far from the anterior nares, either posteriorly or superiorly. Some are situated beyond a deflected portion of the septum, which prevents a proper application of the saw.

1 Diseases of the Nose, p. 203.
2 Archives of Laryngology, vol. III, p. 300.
3 Diseases of the Nose and Throat, p. 248.
4 New York Medibal Journal, 1887.
5 Burnett's System of Disease of the Ear, Nose and Throat.
6 Revue de Laryngologie, 1893, 533.
7 Diseases of the Nose and Throat, 303.

Still others are so small that one can not obtain sufficient purchase for the saw. What is true of the saw is also true of the other instruments which have been mentioned. In all these cases the instruments devised by the writer come into play. They are not unlike the ordinary uterine curettes in form, but being highly tempered and sharpened they are readily capable of cutting the cartilaginous projections from the septum. Several varieties have been used, differing slightly in shape, size and inclination to the shaft.

The principle is the use of a circular or straight blade from 2 to 6 mm. long, attached to the shaft in such a manner that an opening remains for engaging the offending projection. Where the circular blades are used, the opening appears as a triangle with a concavely curved base; with the straight blades it is almost a straight triangle, the most acute angle being toward the shaft.

The cut which accompanies this paper shows their character and appearance. The curettes have been made by the A. S. Aloe Company, St. Louis, whom I must thank for assistance in the experimental stage of these instruments. They will be found very useful in the removal of small spurs especially, one application of an instrument being frequently sufficient. The operator will be pleased with the rapidity of the operation and the smoothness of the surface which remains after the application of the instrument.



Spurs that are high up are easily reached and removed. Projections forming an obtuse angle with the septum are excised with ease and convex ridges are trimmed down with great rapidity. It is sometimes necessary to use the curette several times, taking off a small slice of the cartilaginous projection at each effort. When spurs far back are to be removed the curette is especially indicated. In this particular at least no instrument in my hands has ever been so satisfactory. After sawing, drilling and trephining, nothing is better for paring off the rough edges, as one may be sure that a smooth surface will remain.

The force used must be a pulling force which can not be considered in anywise objectionable. The amount to be used must be gauged according to circumstances, a matter, however, which will require no study on the part of one familiar with nasal operations.

In elderly persons, the instruments are quickly dulled on account of the calcareous nature of the tissue to be removed. The same thing takes place in projections from the bony septum of younger adults. It is therefore often necessary to re-sharpen instruments, but as this may be done without difficulty there can be no serious objection upon that score.

An important consideration is the ease with which these instruments may be cleansed and sterilized. There are no rough surfaces to which general surgeons entertain such disapprobation; every portion is susceptible to thorough aseptic procedures.

I have not found it necessary to use handles at a right angle to the shaft, as advocated by MacDonald, Cheval and others. So far, at least, a handle in the same plane as the shaft has not seemed to interfere with vision. It is doubtful if right angle handles would be as serviceable as a straight handle, from the fact that the availability of the instrument greatly depends upon the precision of the pulling force which the operator exerts.

The amount of hemorrhage that occurs does not differ, so far as I am able to judge, from that occasioned by any other instrument for similar purposes. The instruments may be used on either side of the nose, the anterior, posterior, superior or inferior part of the septum.

My observations lead me to believe that it is unnecessary to take the mucous membrane into consideration, unless an unusually large amount might be removed. The scabbing which sometimes follows septal operations seems to be more dependent upon the lack of smoothness of the surface after operation than upon the coincident removal of the mucous membrane.

After an experience of five years, I consider that I am justified in presenting this for my colleagues' consideration. I do not, however, desire to place myself in the position of advocating that these instruments should replace others in septal operations, for I make frequent use of almost all that have been suggested. I simply present these as being worthy of use in the special class of cases enumerated in this paper.

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ILEUS.

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CHICAGO.

The subject of intestinal obstruction has always been one of great interest and will continue so until our methods and results in diagnosis are greatly advanced. Before entering into the details of the subject, let us take a view of the mechanism of the intestinal tract from the pylorus to the sphincter ani. We have here a long muscular tube of varying size with natural constrictions in certain positions, either from *a*, a special muscular development (sphincters), or *b*, from abrupt changes in the course of

the canal (flexures), or *c*, from gradual diminution in the size of the canal, as of the lower end of the ileum. This canal has, besides its physiological functions those of secreting, absorbing and excreting, the power of propelling its contents by its own muscular contraction. It can readily be seen that a fecal stasis could be produced:

1. By the absence of muscular contraction—paralysis. This paralysis may be of spinal origin, may originate in the afferent nerve, or there may be a local paralysis, as from infection at the terminal filaments.

2. From tonic contraction, as from mineral poisonings, lead and from certain ptomaine poisoning, as tyrotoxicon.

3. It may result from mechanical causes, as constriction in the calibre, bending at a sharp angle, occlusion by a foreign body, as a gall-stone or a neoplasm; compression from without, etc.

With this short consideration of the mechanism of obstruction we will take up the subject of ileus in general. By the term ileus is meant not a definite pathologic entity, but a complexus of symptoms produced by very different causes. The characteristic symptoms of ileus are abdominal pain, inability to produce bowel movement, vomiting and meteorismus (tympanites). These symptoms may be produced by adynamic, dynamic or mechanical causes. We have therefore adynamic, dynamic and mechanic ileus.

SCHEME.

- Ileus
  - Adynamic Ileus
    - 1. Operations on mesentery.
    - 2. Prolonged strangulation.
    - 3. Spinal.
    - 4. Afferent nerve lesion.
    - 5. Reflex
      - 1. Strangulated omentum.
      - 2. Hepatic calculus.
      - 3. Renal calculus.
      - 4. Ovarian compression.
    - 6. Septic.
      - 1. Local peritonitis.
      - 2. General peritonitis.
      - 3. Embolism.
      - 4. Thrombo phlebitis.
    - 7. Uremic.
  - Dynamic Ileus
    - Lead poisoning, chronic.
    - Tyrotoxicon poisoning.
  - Mechanic Ileus
    - External. (Hernia.)
      - Inguinal.
      - Femoral.
      - Umbilical.
      - Ventral.
    - Internal.
      - Peritoneal pockets.
      - Diaphragmatic hernia.
      - Inguinal hernia.
      - Umbilical hernia.
      - Adhesive bands.
      - Diverticula.
      - Volvulus.
      - Intussusception.
      - Neoplasms: Internal / External.
      - Cicatricial contraction.
      - Fecal impaction.
      - Foreign bodies (enterolith).

ADYNAMIC ILEUS

Is always the result of paralysis of a larger or smaller portion of the intestine from the following causes:

1. Paralysis from extensive operations on the mesentery, disturbing its circulation.

2. Paralysis of a loop returned after prolonged strangulation, particularly from femoral hernia.

3. Injuries to the spinal cord, as fractures, bullet wounds and punctures.

4. Injury to the afferent nerve.

5. Reflex paralysis, as that produced by the passage of gall-stones into the ducts, renal calculi, strangulated omentum or compression of an ovary.

6. Septic paralysis from peritonitis, cholecystitis, salpyngitis, embolism of mesenteric artery, etc.

In the first class, where extensive operations have been performed on the mesentery for the removal of tumors, the repair of lacerations, etc., there is always danger of paralysis and gangrene of the dependent coil as a result. I have endeavored to determine by experiment to what extent we are permitted to resect or destroy the circulation in the mesentery, without endangering the bowel, with the following results:

Experiment 1.—Large dog; aseptic laparotomy; ligation of the mesenteric vessels supplying three inches of the intestinal tract, after having emptied the intestine and ligated it so as to occlude its calibre, being careful not to include the parallel artery of the bowel; abdomen closed. Examination forty-eight hours later showed the intestine in good condition. The same experiment was repeated, and it was found that when a

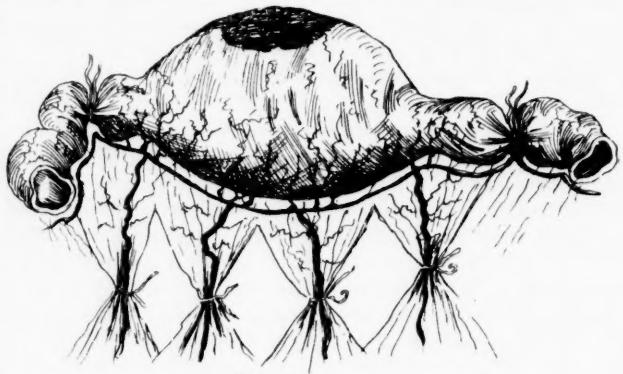


Fig I

greater segment than six and one-half inches was included in the ligatures, gangrene took place on the convex side of the segment near its center (Fig. 1). This shows that the parallel vessel will supply the intestine with sufficient blood to retain its vitality for forty-eight hours, even though the mesenteric supply were completely shut off for that length of time.

Experiment 2.—Ligation of the mesenteric vessels and the parallel vessels of the bowel, without closing the caliber of the bowel, could be made to the extent of one-half inch. When more than this was included gangrene ensued.

The following is of interest:

Experiment 3.—Dog; aseptic laparotomy; mesenteric vessels ligated, supplying a segment of seven inches; segment

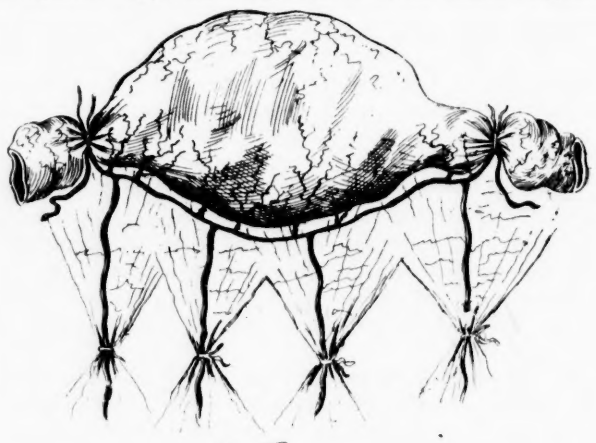


Fig II

emptied; parallel vessel and intestine ligated (Fig. 2). Dog died forty-one hours after operation. Post-mortem: The ligatures around the intestine were still in position, the contents had not escaped. The segment resembled a blood clot, and all evidences of organized tissue had disappeared (Fig. 3). The disintegration was so complete that I can not attribute it to any other cause than auto-digestion. The peritoneum was universally denuded of its endothelium and the cavity contained a considerable quantity of blood.

It is shown by these experiments that the parallel artery must be given the greatest consideration in

operating on the bowel and mesentery. When it is injured, as by a bullet or in an operation, resection should be made of that portion from which its blood supply is cut off.

Ileus following the return of a bowel that has been strangulated for a considerable time, and particularly the severe strangulation of femoral hernia, is due to thrombosis of the veins, a local paresis or ischemia from the occlusion of the parallel artery, and not infrequently causes a fatal termination in cases where appearances promised a restoration to the function of the bowel when returned. This form of ileus must not be confounded, however, with that following reduction of hernia *en bloc*, which will be considered later.

A rare cause of ileus is an embolism of the mesenteric artery, producing an ischemia, paralysis and gangrene.

Pathologic lesions and injuries of the spine, as fractures, produce a paralysis of the intestine, followed by great meteorismus, which may continue for several days after the injury. It is one of the most unpleasant complications following fractures of the spine. The abdomen becomes enormously distended; interferes greatly with respiration, and may even produce prolapsus recti. Under favorable conditions it subsides on the fourth or fifth day after the injury. It may also be caused by spinal hemorrhage following traumatisms without fracture.

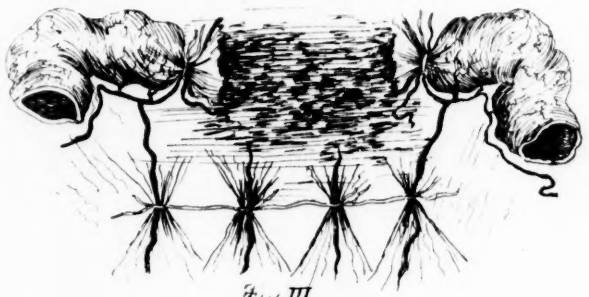


Fig III

The following case illustrates:

Male, age 32, brought to Cook County Hospital: history given as follows: In a quarrel a few hours previous patient was shot in the neck from the front; immediately following the discharge of the gun, he fell to the floor paralyzed and remained so, though he was quite conscious. Examination: A small bullet wound just outside the cervical vessels and an inch below the angle of the jaw; there was no wound of exit; the paralysis of all the extremities was complete and he was aphasic; thirty-six hours after he became unconscious; his respiration was purely diaphragmatic; his abdomen became enormously distended and peristalsis was absent; priapism was marked. These symptoms contined until the end of the fourth day when he succumbed. Diagnosis: Penetrating bullet wound of cervical portion of spinal cord. Post-mortem showed the spinal canal full of blood extending its entire length and compressing the cord. The tympanitis in this was extreme. I firmly believe an operation would have saved this man, as death was caused by compression of the cord with blood.

Injury to the afferent nerve supply, as a blow upon the epigastrium, may produce a paralysis and all the manifestations of obstruction; a bullet wound in the mediastinum may have the same effect, as is illustrated in the following case, which occurred during my service at Cook County Hospital in the spring of 1890:

A police officer was pursuing a burglar upstairs when the latter turnd and fired downward. The bullet passed into the mediastinum at the right sterno-clavicular junction. There was no evidence of injury to the lung, large blood-vessels nor stomach, but the patient gradually developed the symptoms of ileus; pain in the abdomen, not severe; slight tenderness; vomiting persistent; enormous distension of the abdomen; complete absence of peristalsis; inability to produce bowel movement. These symptoms continued for seven days; patient's pulse was then 140; temperature 99°; respiration 46; facial expression bad, and death seemed imminent. Diagnosis: Perforative peritonitis. Laparotomy. The intestines enormously distended, but not congested in the least; no inflammation at any place in the peritoneum; a small quantity of transuded serous fluid was present in the most dependent portion of the cavity. The fluid contents of the bowel gravitated with alteration of position and explained the cause of the change in the location of dullness noticed before operation, viz., that dullness was present always in the dependent portion of the abdomen, but the operation showed it was not due to free fluid *in the cavity*, but to fluid that gravitated to the dependent portion of the intestine on account of the complete paralysis. The abdomen was closed. The stimulation of the operation produced an active peristalsis, which was soon followed by the passage of gas and feces; vomiting ceased, pulse improved, facial expression changed, and the patient made a rapid and uneventful convalescence. This is a typical case of ileus from afferent nerve paralysis.

Reflex ileus may be produced by: *a*, Strangulation of omentum; *b*, gall stone obstruction in the cystic or common duct; *c*, impaction of renal calculus in ureter, and *d*, by compression of an ovary.

In strangulated omentum the symptoms of ileus are very pronounced and continue for a considerable time in the early stages, and it is difficult to make a differential diagnosis between it and mechanical obstruction of the intestine.

In obstructions to the cystic or common duct the symptoms of ileus are also pronounced and continuous. I have in the last two years seen three cases in which the patients were prepared for laparotomy for intestinal obstruction where this condition existed in the cystic duct. Ileus from renal calculus is of shorter duration than the other varieties mentioned.

Occasionally an ovary is compressed between the bony wall of the pelvis and a fibroid or other tumor, producing the symptoms of ileus, which continue with greater or lesser severity until the ovary is released.

Ileus from sepsis or infection ileus: *a*, peritonitis general; *b*, peritonitis local. The peritonitis may be of chemical or bacterial origin. An infection of the peritoneum can occur from a perforation, through impaired resistance of the wall, as an ulcer in the appendix or intestine, through a diseased tube or gall bladder, or from a suppuration contiguous to it. We have in the peritoneum as a result of this infection either an acute, rapidly destructive type, where the symptoms of obstruction are pronounced at the onset and continue until a few hours before death, when relaxation takes place and there are frequent fluid bowel discharges. This is characteristic of peritonitis, and does not occur in mechanical obstruction. The post-mortems show the peritoneum red, denuded of its endothelium, with but a small quantity of exudate and no flakes nor pockets of pus. There are multiple capillary hemorrhages, the gloss is absent and bowel greatly distended. This is the variety which occurred very frequently after operations in the peritoneal cavity in the pre-antiseptic period, but now, fortunately, it is very rare.

In the subacute and circumscribed inflammations of the peritoneum the symptoms of ileus are less pronounced and pass away in about forty-eight hours after the onset of the attack. In these cases the laparotomies and post-mortems show the bowel covered with a fibro-purulent exudate, many adhesions and often circumscribed accumulations of pus. The more

acute the attack the more the pathologic phenomena manifest themselves. The infiltration of the intestinal wall produces a paralysis of peristalsis, and the more virulent the poison the more complete and lasting the paralysis.

Uremic ileus.—In one of the varied forms of uremic manifestations—the intestinal variety—we have symptoms very clearly resembling those of mechanical intestinal obstruction. The physical signs of intestinal obstruction, as increased peristalsis, tympanites, circumscribed areas of dullness are absent, while the vomiting and inability to produce bowel movements are persistent. No other uremic symptoms may be present to suggest the diagnosis, but an examination of the urine demonstrates organic disease of the kidneys. It must be remembered that intestinal obstruction can occur in an uremic and, on the other hand, that a small percentage of albumin is often present in mechanic ileus.

DYNAMIC ILEUS

is produced by a tonic contraction of the circular muscular fibers of the bowel. This contraction may continue for days. It may be caused by poisoning with lead, tyrotoxicon, etc.

MECHANIC ILEUS

or mechanic obstruction: 1, Strangulation of intestine, internal and external (hernia); 2, invagination; 3, obturation, internal (neoplasms, volvulus) and external (incarcerated hernia).

1. By strangulated ileus we mean that not only is the intestinal tract impermeable to its contents, but that the circulation is impeded or suppressed, the nutrition of the coil is shut off and its necrosis is imminent. The mesenteric vessels are the first to yield to the pressure, but the parallel vessel keeps up the blood supply for a long time after, as it is so thoroughly protected against pressure by its position. (Fig. 4 and 5.) In the first variety we have strangulated hernia, inguinal, femoral, umbilical and internal strangulation by diverticula, pseudo ligaments, adherent appendix vermiformis, appendix epiploica, adherent omentum, etc.; strangulations through openings in the omentum and mesentery, retention in peritoneal pockets, or by a twisting of intestine on its axis (volvulus). All of these conditions can produce complete strangulation and necrosis. The danger is great and they run their course rapidly.

2. Invagination holds a middle place between strangulation and obturation, as well for the severity of its symptoms as the tendency to local necrosis and danger to the life of the patient. The symptoms are, as a rule, less pronounced, but of longer duration. Often the invaginated portion may escape necrosis, and should it become necrotic, may slough off and pass through the bowel without causing death. In obturation ileus the symptoms come on slower, the local destruction is more gradual and the danger to life is more distant, depending upon the degree of obstruction and the cause, whether it be simple contraction of the lumen of the bowel, a gradual compression of its caliber by an occlusion from within, an occlusion by a foreign body, as a gall stone, an intestinal fibroma or polypus, a gradual filling and compression from carcinoma or sharp bending of the canal.

Ileus from tonic contraction of the circular muscular fibers of the intestinal wall may produce obstruction with all its concomitant symptoms, lasting for many days.

After this short review of the pathologic conditions we will take up the diagnosis.

Diagnosis.—Can we differentiate with any degree of certainty at the bedside between the various forms of ileus, or between the various groups? This can safely be answered in the affirmative. When we consider that the complexus of symptoms included under the term ileus occurs under so many distinct and different pathologic conditions, it is easily understood why the practice of physicians differs; why the statistics of various men differ; why one class of doctors finds that 100 per cent. of the cases of ileus not operated die, and that another class finds that 34

Fig IV

per cent. of them recover without operation. The reason for these apparent discrepancies is that different pathologic conditions are included under the name of ileus by the various observers.

We will now endeavor to draw attention to the history, the etiology and the clinical course of ileus.

The history will assist us greatly, indeed, if not assure us of a diagnosis of intestinal paralysis following operations on the mesentery, the return of a long strangulated hernia, injuries to the spinal cord, injuries to the afferent nerve supply and strangulated hernia and aids us somewhat in making a diagnosis of thrombosis and embolism of the mesen-

Fig. V

teric vessels. In the reflex paralysis, gall stone colic with or without jaundice, or renal colic, the history of previous attacks aids in the diagnosis. The history is of less value in the inflammatory and mechanical varieties. Here the clinic course, symptoms and signs, will have to be relied upon. The abdominal pain is recognized as a manifestation of irritation of the terminal nerve filaments of the peritoneum, and will vary in intensity, continuity and locality, depending upon the lesion present. Inability to produce bowel movement has already been explained

and may be due to many causes, which will be given in detail in reference to the different groups.

Of the explanations of the mechanism of vomiting, and particularly the fecal vomiting, that have been given, the two most important are the following: 1, that it is due to reversion of peristalsis; 2, that it is due to an overflowing of the accumulations on the proximal side of the obstruction; the increase in quantity is due to decomposition of the contents and transudation from the irritated mucous surface. Schlange has given his support to the latter theory, but it is not the only cause, for in attacks produced by gall stone and renal calculus we have no occlusion of the bowel, nor accumulation on the proximal side to produce an overflowing; still the vomiting is often very persistent, and it is my belief that here a reflex cause is the most potent factor in producing vomiting. Fecal vomiting, when it occurs, always comes from a mechanic obstruction of the intestine, but it has no definite relation to the position or nature of the obstruction. In the literature on the subject we find records of cases where formed feces were vomited. The accurateness of this observation I question. It is a rare occurrence to find material vomited which has the distinct odor of feces. There is an odor different from the fecal, that of decomposition of the intestinal contents which occurs in intestinal obstruction. I have seen but two cases in which a distinct fecal odor was present, and both were obstructions of descending colon. Formed feces could come only from the large intestine, and I believe this has never occurred. The material which has been considered formed feces, is mostly a caseous material, curdled milk which has received its color and odor in the stomach from the regurgitated contents of the intestine.

Meteorismus occurs in three places in the intestine: Above the seat of obstruction, in the occluded loop, or in the paralyzed portion—the latter may be that coil or the entire intestinal tract. The contents of the distended intestine differ materially in the three different conditions. With mechanic occlusion on the proximal side in close proximity to the obstruction the intestine is usually full of liquid feces, principally transudation from the mucosa. With strangulation or occlusion of a coil it is distended about one-third with gas and two-thirds with liquid. The source of this fluid and gas I have demonstrated conclusively by the following experiment to be transudation and decomposition.

Experiment 4.—A dog, weight forty pounds; aseptic laparotomy; six inches of small intestine drawn out, mesenteric vessels supplying six inches of the intestines ligated with silk; segment completely emptied; lumen of bowel closed above and below this portion, precaution being taken to pass the ligature between the muscle wall of the intestine and the parallel vessel, allowing the latter to be free. Examination forty-eight hours after showed the coil very much distended, the wall edematous, slightly discolored over a small area about the size of a nickel on the convex side of the center of the segment. Caliber of bowel about two-thirds full of fluid and one-third gas. This experiment was tried three times, each time with the same result, which demonstrated that the gas was generated within the segment, and that the fluid was a transudate. The same result was obtained, except the quantity of transudation was less when the mesenteric vessels were not ligated, but the intestine itself ligated. Quite another result was obtained when the mesenteric vessels were ligated and the intestine, including the parallel vessel, was closed, as shown by experiment 3.

In the latter experiment after twelve hours there was but a very small quantity of gas and still less fluid in the coil; it was dark and gangrenous. In less than forty-eight hours with these same ligatures the segment was entirely disintegrated. This shows: 1, that the nutrition of the intestine in strangulation is kept up for a longer time by the parallel vessel; 2, that the gas in the strangulated loop is generated within the coil; 3, that the fluid within the coil does not enter from above nor from below, but is a transudation from the mucous membrane and continues as long as the blood supply from the parallel artery remains, as this artery has no accompanying vein; 4, when the strangulation is rapid and complete, as in Littre hernia, there is no transudation into the coil and but slight generation of gas.

The shape and position of the distended coils will be found to be of great service in making accurate diagnosis of the location of the strangulation. The inability to produce bowel movement is due either to mechanical obstruction or paralysis, the latter may be local, reflex or of central origin. Its phases will be considered in the analysis of the various groups.

Of the constitutional symptoms, one deserving particular attention is the excretion in the urine of phenol and indican. They are the products of absorption of decomposed proteids from the intestinal tract. The indican is present in occlusions of the ileum and absent in obstructions of the large intestine. Albuminuria is very commonly present in intestinal obstruction. In making differential diagnosis the symptoms should be carefully considered in the order of their onset, in the comparative degree of their intensity, the location of their most pronounced manifestations, their continuous or interrupted course, and their relations to physical signs at the various stages of their progress.

Next in importance is a careful physical examination. Inspection, palpation, percussion and auscultation should be practiced systematically in every case of intestinal obstruction, as they have a very positive value in assisting us in making a diagnosis. By these, in intestinal lesions, we recognize the changes in form, in resistance, position and movement of the intestinal coils.

We will now consider the particular forms of ileus.

First. Ileus from paralysis following extensive operations on the mesentery can be at once recognized by the operator and managed better from a prophylactic standpoint than from any other, that is, by a resection of the portion of the bowel where the circulation has been compromised at the time of the operation.

Second. Paralysis from long standing strangulation, I will mention when considering hernia.

Third. Embolism of the mesenteric artery has no pathognomonic train of symptoms or signs, but the history of previous sepsis aids very much in leading to a diagnosis of this rare condition.

Fourth. Paralysis of the intestine from injuries to the spinal cord is readily recognized.

Fifth. Injuries to the afferent nerve supply from direct contusion or from bullet or stab wounds produce ileus where the abdomen has not been involved by the traumatism directly; this variety is usually accompanied by retention of urine, while in perforation of the viscera this symptom is not present. Reflex ileus from renal calculus is recognized by the spasmodic character of the pain, its location in the loin and course of the ureter, its intensity, its reflex

on the bladder and testicle, its duration, the position of tenderness, the progressive change of its location and the information obtained from an examination of the urine. The same symptoms are of value in recognizing periodical hydronephrosis.

In hepatic calculus there is greater difficulty in making a differential diagnosis. First, when the gall stone is still within the gall bladder, the pain gradually increases and reaches its greatest intensity about an hour after the onset; it continues for a few hours and subsides to return again in a short time. It is commonly designated by the doctor and patient as "gastralgia"; the bowels can be moved as a rule within a few hours after the attack begins, and there is always local tenderness in the region of the gall bladder. If a mild cholecystitis be present, there is slight elevation of temperature to 99½° or 100°. The pain often subsides suddenly after a severe effort of vomiting. The patient usually gives a history of having had repeated attacks of the same character. The tenderness remains for two or three days after the attack, depending upon its severity. The following case is a good illustration:

K. P., female, age 32 years. For several years has had several attacks of the following character: First, a sense of fullness and discomfort in the right hypochondriac region: within fifteen or twenty minutes this increased to pain, in one-half an hour the pain was severe and nausea set in. This was succeeded in from thirty to forty minutes by vomiting. If the vomiting was mild the pain would continue: if severe, it would subside. The temperature usually reached 100 degrees; slight tympanites. The patient believing that the attacks were due to biliousness, resorted to cathartics for relief. It always required large and repeated doses to produce an evacuation when pain was present, while under ordinary circumstances a mild cathartic acted freely. Tenderness was present and increased resistance over area of the gall bladder, and when all the symptoms would abate a small tumor could be detected over, but separated from the kidney. Tenderness would increase for three or four days after the attack had subsided, according to its intensity. Albumin in the urine. Patient had never been jaundiced. Diagnosis: Cholelithiasis; impaction of the gall bladder; operation, cholecystostomy; gall bladder enlarged; neck impacted with large gall stones; recovery; cessation of symptoms. The above symptoms contrast markedly with the symptoms of cystic duct impaction, as is illustrated by the following case, which is typical of its kind:

Mrs. Z., aged 36 years, married, six children; excellent health up to 22 years of age. At that time she had a short attack of severe epigastric pain and vomiting. From that time on she had suffered from digestive disturbances and tenderness in the right hypochondriac region. Four years ago she had a similar seizure of longer duration, and during it there was inability to move the bowels. Henceforth the seizures returned every five or six weeks, and for the last five months the pain and tenderness in the hypochondriac region had been constant, with periodic exacerbations. Patient had never been jaundiced. Examination during an attack revealed tenderness in the right hypochondriac region; induration; tympanites, temperature 100 degrees. Diagnosis: Cholelithiasis; impaction of cystic duct. Operation cholecystenterostomy by means of an anastomosis button; gall bladder packed with gall stones; a dozen or more were removed and many allowed to remain; recovery; cessation of symptoms.

When the common duct is obstructed the onset is more sudden, the pain more intense, always accompanied by bile in the urine, often jaundice, depending upon the duration of the obstruction and other symptoms well recognized and familiar to all physicians.

A third variety of reflex ileus is that produced by compression of an ovary, as by fibroids; it may be recognized by the history of the case and the location of the pain, which can be lessened or increased by certain movements of the fibroid and frequently relieved by changing the fibroid from its impacted position.

Dynamic Ileus.—Dynamic ileus or ileus from spasmodic contraction of the muscular wall occurs, first, from ptomaine intoxication, as that obtained from cheese, milk, ice-cream, oysters, etc., and second, from chronic lead poisoning. In the former the pain is intense and often relieved by pressure. The vomiting is incessant; tenderness absent; abdomen retracted; inability to move the bowels; patient collapsed; these symptoms may continue until death, which occurs from toxemia. If the patient survives the immediate effect of the poison, it is usually followed by severe gastro-enteritis.

In making a diagnosis of lead poisoning we have to assist us the occupation of the patient, the history of previous attacks, the blue line of the gums, etc.; but the increased peristalsis, the local meteorismus, the distinct localization of the pain, make it difficult to exclude mechanical obstruction, as the following case illustrates.

Male, aged 40 years; admitted to the Alexian Brothers' Hospital June 10, 1894, and referred to me for operation by the attending physician. Patient gave the following history: Five days previous was attacked with pain of a spasmodic character in the abdomen, followed by vomiting and inability to move the bowels. The abdomen became greatly distended and the symptoms continued up to the time of admission. All efforts to

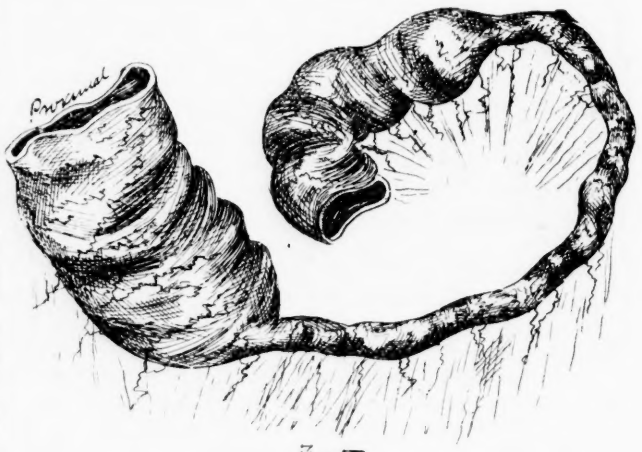


Fig. VI.

move the bowels by cathartics, stomach and intestinal irrigation were futile. The physician in charge, who had treated him through a number of attacks of lead colic before, believed this attack differed materially from the others, particularly in its duration, which was five days, and the degree of depression. The physical signs showed the abdomen decidedly tympanitic, and an enlarged coil of intestine could be recognized leading up to the right hypochondriac region, where it suddenly terminated. The patient located the pain at this point. It was decided that a laparotomy would be less dangerous than to allow the patient to remain longer with a possible mechanical obstruction. Median incision; omentum withdrawn, and the hand passed up to the right hypochondriac region, the enlarged coil of intestine was grasped, drawn into the wound; with it came eight inches of a contracted portion, which resembled a solid cord three-eighths of an inch in diameter and was as stiff as a rope of that size. (See Fig. VI.)

At first I believed it to be an organic stricture. The intestine above it measured over two and one-half inches in diameter and was distended with gas and fluid feces. Below, the intestine was empty, soft and pliable. After ten minutes' exposure to the air the spasm at the proximal end began to subside and dilatation gradually advanced to the distal. After twenty minutes the intestine had expanded to about one inch in diameter, was returned and the abdomen closed. The bowels moved within three hours. The patient did not have an unpleasant symptom and left the hospital in ten days. The theory of lead colic advanced, has been that it was due to a tonic contraction of the muscle of the bowel; but from a superficial review of the literature on the subject, I can not find a case recorded

where this theory was verified by observation and examination of the contracted portion as I have noted in this case.

Infection ileus. Ileus from peritonitis occurs under two conditions, namely, that from a circumscribed local inflammation, and from a general peritoneal infection. In ileus from circumscribed inflammation we have the symptoms so commonly observed in circumscribed suppuration at the seat of the appendix. The pain occurs suddenly and may be either local, referred or general, but is most severe at one point. The nausea and vomiting are of short duration, usually not more than one-half hour, and within six or eight hours there is elevation of temperature to 100 degrees, or more, and not infrequently a chill. The information obtained from the pulse is of little significance. Marked resistance of the abdominal muscles and tenderness is present over the seat of inflammation. On the other side of the abdomen the hand can be pressed in without causing pain or inducing resistance. The tympanites is limited. The apparent induration is circumscribed; the deep percussion note is resonant in the early stage. The piano percussion note is flat, and this method of percussion I consider the most important in eliciting dullness when small inflammatory exudates are present. The smallest quantity of fibro-purulent or serous exudate can be outlined by the latter method. Auscultation shows an absence of peristalsis over the region of inflammation, with peristalsis moderately active over the remaining portion of the abdomen. In making a careful examination with the stethoscope and the use of an indelible pencil, it is interesting to note how perfectly the area of adhesion and exudation can be outlined by the absence of peristalsis and subsequently proven in the operation. The symptoms of ileus pass off with these local inflammations in from twenty-four to forty-eight hours, when a free bowel movement can be produced by the use of cathartics. These same symptoms only less pronounced, occur with circumscribed adhesive peritonitis from cholecystitis and tubal infection, and in each case can be differentiated by its location and history.

Note what a great contrast this is to the ileus of general peritonitis. In this variety the pain is intense and extends all over the abdomen; the nausea and vomiting are persistent for days; the temperature elevated to above 100 degrees except in the presence of collapse; the pulse frequent, small and thready; the skin cold; the countenance depressed; anxious expression; enormous and uniform meteorismus; absence of respiratory movements in the abdomen; knees flexed. On palpation resistance is greatest over seat of origin; muscles are firmly contracted; deep percussion note uniformly resonant; piano percussion note dull over area of adhesion and exudation; complete absence of peristalsis. An uniform splashing sound with each respiration, caused by motion of fluid in bowel must not be mistaken for peristalsis. In this the sound is uniform with every respiration; in peristalsis it varies constantly. It is impossible to induce a bowel movement; the obstruction is as complete as if the intestines were ligated, and remain so until a few hours before death, when relaxation takes place. To the inexperienced this is considered an indication of relief of the "obstruction," but it is really a sign of impending dissolution. The cause of the ileus in these cases is a peripheral paralysis.

What should our treatment be in cases of ileus from circumscribed and general peritonitis? It should be immediate laparotomy. By this means in cases of circumscribed peritonitis the cause may be eliminated and the inflammation prevented from becoming general, not that all cases would die immediately as a result of the disease, but that the immediate and remote dangers without operation are very much greater than with operation. In general peritonitis the danger is great both with and without operation, but it is my firm conviction that an early operation, that is an operation within twelve or twenty-four hours after the onset of the symptoms, will save a large percentage of the cases. An operation in the late stage, when the patient has cold extremities, is pulseless at the wrist and dissolution is imminent, should be discouraged, as it does no good for the patient and brings discredit on surgery. The importance of early operation in general peritonitis is illustrated in the two following cases:

Case 1. Referred to me by Dr. James G. Berry. G. F., aged 19, weight 220 pounds. On the morning of Sept. 8, after breakfast, he was attacked with severe pain in the abdomen. This was shortly followed by vomiting. The pain and discomfort were sufficient to compel the patient to remain in the house, but not in bed. On the following morning at 10 o'clock, twenty-six hours after the onset of pain, he walked a couple of blocks and consulted a druggist as to his condition. He was advised to see a doctor. About 3 o'clock he was seen by Dr. Berry, when a diagnosis of appendicitis was made. At 4 o'clock his condition was as follows: Pulse 140; temperature 102°; tympanites excessive; tenderness most marked on deep pressure over appendix; peristalsis absent; inability to produce bowel movement; patient's facial expression good. He expressed himself as feeling tolerably comfortable. Respiratory movements of the abdomen absent; deep percussion note resonant; superficial dullness ever the entire abdomen. Immediate laparotomy. The abdomen was opened two inches to the right of the median line parallel to the external border of the rectus. On opening the peritoneum, a sero-purulent fluid escaped. There were no adhesions. Pus was found in all directions, a large quantity of it being in the pelvis. The cause of the peritonitis was found to be a pressure atrophy of the appendix with perforation. There were no adhesions around the appendix; no gangrene of the mucous membrane. The peritonitis was produced by a direct perforation of the appendix from pressure from a calculus. The pus was sponged out, drainage glass tube and gauze. Normal gloss of the intestine was not disturbed in the least by the presence of pus; the surface was not even red. The patient made an uninterrupted recovery.

Case 2. Referred to me by Dr. D. R. Connell, Oct. 21, 1894. B. P., female, aged 21. Ten o'clock on the night of Oct. 20, the patient experienced severe pain in the abdomen, followed by nausea and vomiting, great tenderness and a temperature of 100.6 degrees. Diagnosis appendicitis. Operation thirty-six hours after the onset of symptoms. At the time of operation the abdomen was uniformly distended and tender, absence of peristalsis, inability to produce bowel movement, patient still vomiting, pulse 120, and temperature 100.5 degrees. Deep percussion note resonant; superficial (piano) percussion note on the lower part of abdomen dull, on the upper resonant. Celiotomy. No adhesions of peritoneum; the coils of intestine in all directions were covered with pus. Half a pint of pus was found in the cul-du-sac of Douglas. Intestines not eroded, slightly congested, still glistening; appendix adherent; a few flakes of lymph on its surface; an ulcer of the mucous membrane, but no perforation present. The source of infection was evidently the appendix, infection traveling through the wall at the seat of the ulcer or by the lymphatics. The pus was sponged out, no irrigation, glass and gauze drains in all directions. Rapid recovery.

The result in these two cases shows what can be accomplished in early operation for suppurative peritonitis; but this favorable outcome must not be expected from the dry, ecchymotic, excoriated peritonitis from streptococcus infection.

Cases of adynamic ileus have only recently been brought to the attention of the surgeon, but from the

illustrations of the varieties given it will be seen that there is a fertile field for intelligent surgical interference, based on accurate diagnosis.

(To be continued.)

PRIVATE DISPOSAL OF HOUSEHOLD GARBAGE.

BY D. H. GALLOWAY, PH.G., M.D.
CHICAGO.

One of the first problems which engaged my attention on taking charge of Dr. Bayard Holmes' Private Hospital, was the disposal of hospital and kitchen refuse.

It was imperative that soiled dressings should not be put with other garbage to be hauled about the city and be handled by many persons. Even throwing them into a metallic vessel, to be carried from room to room and to be handled at least once more when the vessel was to be emptied, was repugnant to me. That ever-present article—at once a nuisance and of unlimited usefulness—the old newspaper, seemed to be "indicated."

When a soiled dressing was removed from a wound it is was immediately rolled up in a newspaper and put into a receptacle provided for the purpose. When the morning dressings were all done these small packages were made into large ones with more paper, and in this way conveyed to the furnace room. All repulsiveness and danger were thus obviated. This led me to contrive a way to dispose of all hospital and household refuse which has been in use in this hospital, with perfect satisfaction ever since. It is simple, inexpensive and effective.

I require that all garbage of whatever kind be wrapped into packages with newspaper or other paper as the butcher wraps up a steak. Tin cans and other non-combustible material, of course, not included. A wire basket drains as dry as possible all garbage containg water. When the furnace is not in use it is prepared by closing all registers as well as dampers in hot air pipes, and opening all drafts. A small amount of kindling is put in the furnace and on this the packages are piled. When the furnace is full the kindling is ignited and it is left to itself. Next day the furnace will be found empty except for a small quantity of fine ashes. Even melon, lemon and orange rinds, cobs and husks of green corn, potato parings, coffee grounds, etc., are completely disposed of in this way. Sometimes I have found it necessary to light a newspaper on top of the garbage in order to start a draft up the chimney, but ordinarily there is no trouble, little heat, no odor and no smoke is noticed about the building. This applies to the summer when the furnace is not in use. I found it a little more difficult in winter, and once I thought I should be obliged to give it up. After some trials, however, I found the following method entirely satisfactory. In the morning all drafts are opened, the fire is shaken down and fresh coal put on, then the packages of garbage are put in on top of the coal. After ten or fifteen minutes the drafts are arranged as they would be if no garbage had been put in, and the next time the furnace needs attention the garbage has disappeared. After putting the packages in the furnace they should never be broken up or stirred with a poker. At first sight it would seem that a considerable amount of fuel would be required, but such is not the case. Our family consists of from twelve to twenty persons, and such a family will make a large amount of garbage each week; yet during the entire summer I did not use altogether a dollar's worth of kindling. Fruit baskets, berry boxes and other readily combustible material furnished most of the fuel necessary.

This method has been in use in this hospital for more than a year, and in that time absolutely not a pound of garbage has been put into the street, nothing but ashes, tin cans, broken glass and crockery. The secret is in the packages. The difference between these and loose garbage in the matter of combustibility is the same as the difference between lump coal and slack coal, the one will burn where the other will extinguish a fire. How to dispose of the garbage of cities is one of the most vexing of the great economic problems of this age. Burning is a wasteful process and dumping into lakes or water courses is disgusting and at all times a menace to the health of the community. All refuse organic matter, whether animal or vegetable, should be returned in some form to the soil as fertilizer. It is a mine of wealth wantonly wasted. If given an opportunity nature's laboratory would transform the nauseous stuff and return it to us in fruits and flowers and a thousand other attractive forms. The present method of disposing of this vast portion of nature's labor is a heavy draft on our inheritance which must sooner or later be stopped; unless the chemist realizes his dream of making animal food in the laboratory direct from the inorganic world.

If, however, it must be destroyed, it should be by fire and not by being piled up in great dumps to breed disease, nor thrown into water where it may be conveyed to great distances spreading pestilence by the way. If it is to be burned, then the nearer the source of supply—the household—the less offense and expense will it cause. It is produced in greater or less quantity by every family, but how few exercise any care about its disposal. It is carried into the street or alley, thrown into a wooden box and then left to stew and rot and stink until the scavenger comes along and gathers it up. Even then the offense is not removed for the box continues to emit foul odors and is a culture ground for all sorts of disease-producing germs. Waste paper is one kind of garbage which every one ought to be able to dispose of without throwing it into the street. Yet I have literally seen hundreds of newspapers and pieces of wrapping paper from dry goods stores, groceries, and meat markets, the last covered with grease and flies, piled about a large flat-building so that if one had set fire to the rubbish it would have seriously menaced the building. The tenants in such buildings, using steam heat and gas ranges, have no facilities for burning even waste paper, but there is always a furnace in the basement and provision should be made for conveying to the furnace and there burning it. Many of the tenants of these large buildings make a practice of throwing all waste paper out of the windows. This practice is an offense to the rest of the community and should not be tolerated. A few arrests with a nominal fine of a dollar and costs, and due notice of such arrest and fine in the daily papers, would greatly stimulate a healthy public sentiment against the practice of throwing rubbish into the street.

One very windy day I saw a woman sweep out of a vacated store enough waste paper to make a good-

sized wagon load, and this paper littered the street for a mile in the time it took me to ride that distance on a bicycle.

A most provoking, because unnecessary, nuisance is the rubbish brought by the wind and deposited in dooryards and passageways. Every householder who has any regard for the appearance of his lawns must gather up this litter two or three times a day, and only the person who gathers it up can form any conception of its great quantity. The man who deliberately throws upon the street something which he knows another must go straightway and pick up, exhibits a selfish disregard of the rights of others which is evidence of moral degeneration or arrested development. There is one other thing to which I wish to call attention. Horses are driven about the streets dropping filth which is dried in the sun, powdered by passing vehicles and blown by the wind into our mouths and nostrils, onto our tables and into our food. Why not require that every horse carry, attached to its harness, a receptacle into which the dung would fall? Such a thing could be of leather and not overly conspicuous. Would this not be cheaper, to say nothing of the other considerations than to hire an army of men to go about and gather it up? No doubt this will bring an incredulous smile to the face of many a reader. People are prone to submit to anything, no matter how disgusting or dangerous, if it is time-honored. There is a feeling that because an evil *has not* been corrected it *can not* be corrected. A few years ago the bicycle was considered an interloper upon the streets which were held sacred to the horse. In a few more years I expect to see the tables turned by the bicycle and other machines for locomotion and transportation, and then the man who drives a horse will be compelled to take some such precautions as mentioned or be confined to certain streets or alleys.

26 39th Street.

CEREBRAL LOCALIZATION IN THE LIGHT OF RECENT HISTOLOGIC RESEARCHES.

BY CHARLES K. MILLS, M.D.
PHILADELPHIA.

A year or two ago, we were inclined to think that the subject of cerebral localization had been practically settled, and that we were not likely to get much new light upon mooted questions.

Recent histologic investigations—brought together in a valuable paper in *Brain*, by Andriezen, which paper also contains much original work—have divided and subdivided the cortex into new layers and sublayers, and have determined and traced the constituents of these layers in a manner which a few years ago would have seemed utterly impossible. The resulting generally accepted histologic subdivision of the cortex is into four layers—the molecular ambiguous, great pyramidal and polymorphic. The molecular layer, which is the most superficial cortical strip, has been subdivided into strata, and more than a dozen cell and fiber systems have been traced to it and within it. Practically, the standpoint which I have always taken with reference to the question of sensory and motor localization, is that which is still held by Bechterew, Ferrier and others; namely, that just as we have separate auditory, visual, gustatory, olfactory and motor zones, so we have a separate cortical localization for what is sometimes termed common sensibility; in other words, for the representation of such cutaneous and muscular sensations as touch, pain, temperature, pressure, and the location of a limb or part.

According to Andriezen, the terminals and collaterals of the main portion of the fillet radiations, that portion which conveys cutaneous and muscular sensory excitations, pass into one of the strata of the molecular layer, of the Rolandic as of other portions of the cortex, to there come into contact with the apical processes of the great pyramidal and ambiguous cells. Andriezen would therefore call these cells the first sensory cells of the cortex, no matter where they are situated. This view might therefore be regarded as making a sensori-motor region of the area around the central fissure; or rather, if carried to its logical extreme, as making the entire cortex simply a region for the reception of sensory impressions.

For the practical purposes of the physician and surgeon, no matter what view may be taken of the nature of the processes going on in the cortex, it would seem best to still hold to the view of the separate localization of areas for the special senses, for motion, and even for muscular and cutaneous sensibility. Lesions of these areas produce phenomena of vision, audition, motion, sensation, etc., which are not produced when the lesions are situated outside of the special areas to which the functions above mentioned are assigned. The fillet radiations for cutaneous and muscular excitations, as a compact bundle, probably reach or most closely approach, the outer layer of the cortex in the postero-parietal convolutions and in the limbic lobe. Whether we should regard the cells and fibers which bring about communication between these regions and the motor cortex as true sensory terminals or as simply constituting a field of conjunction, the only cortical and subcortical lesions which will produce pure and marked sensory symptoms will be those occurring in these areas. "These incoming messages," says Andriezen, "which inform the brain of the movement of the limb, arrive (strictly speaking) not in the pre-Rolandic but in the post-Rolandic (ascending parietal) convolutions. In the pre-Rolandic or ascending frontal convolution, and in the adjoining posterior portions of the three frontal convolutions as well as the prolongation of these areas on the mesial (marginal) convolution, we find the last term in the cortical series, the finally disposed executive mechanisms."

It would perhaps be best to define the cortical area for cutaneous and muscular sensations, as that part of the cerebrum where the fillet radiations most nearly approach the surface of the brain, before their final ramifications in the molecular layer, still holding to the old view with reference to the motor cortex. Andriezen, as already stated, speaks of the pyramidal and ambiguous cells as the first sensory cells of the cortex, because the terminals of the fillet radiations or their extensions, first touch the apical processes of these cells, and therefore these cells first receive sensory impressions from the periphery of the body. It would be better, following Forel and Nansen, to disregard entirely the subdivision into the cells of sensation and motion, and take the broad ground that we are simply dealing with the greatest and highest of sensori-motor areas, and that in the region posterior to the area usually recognized as motor, the last stage in the sensory process is reached,

while in the Rolandic cortex the first stage in the motor portion of the process begins.

DISCUSSION.

DR. J. F. BURNSHED, of Long Island City, New York—The subject brought up by Dr. Mills is of great importance, not only to the specialists in nervous diseases, but also to the general practitioners, to which latter class I belong. I have had some twelve cases of trephining to do and I know what puzzling conditions will beset a man in regard to cerebral localization. Any studies which will throw more light upon this subject will be eagerly availed of by the general practitioner.

THE ETIOLOGY OF TINNITUS AURIUM.

Read before the Society of Ophthalmology and Otology of Washington City, Oct. 8, 1895.

BY S. O. RICHEY, M.D.

WASHINGTON, D. C.

Impaired hearing and tinnitus aurium are the two most common and distressing subjective symptoms of affections of the ear for which our aid is sought. Often the individual has reconciled himself to the impaired hearing, but is urgent for relief from the persistent torturing sounds of which he has the monopoly. The character of the tinnitus exciting most complaint is the ringing, buzzing, twittering, ticking or grating sound, which is as constant as the chronic progressive deafness with which it is associated, varying only in power or intensity at different times.

Of the many causes of tinnitus aurium a number are promptly recognized, and have only to be understood to be relieved, viz., small objects on the drum membrane, or in the external meatus; obstruction of the Eustachian tube, or of the external auditory meatus; overdoses of quinia or of the salicylates; the use of tobacco or alcohol in some persons; worms, fluid in the tympanic cavity, polypi and tumors of the cervical region; in none of which is the tinnitus of the distinctive character above described.

The cause of tinnitus is not always so apparent, nor when discovered so tractable to our efforts for its relief; as in hyperemia and anemia of the brain and the deeper structures of the ear; from the menopause or menstrual irregularities; from nervous shock, hysteria, mental excitement, worry or overfatigue; from concussions and from morbid conditions of the heart, liver or kidneys. Ankylosis of the ossicula auditus, especially of the foot-plate of the stapes in the foramen ovale, is an active factor in the etiology of tinnitus. Ankylosis of the other articulations, while difficult to relieve, does not offer the formidable embarrassment which attends ankylosis of the foot-plate of the stapes, because they can be reached through the Eustachian tube by means of vapor of iodin and the joints rendered movable by this means and by the *tapottement* inseparable from inflation of the tympanum. They are cases which may be, *and are*, relieved by such treatment; those which are *not* so influenced will be found to depend upon ankylosis of the stapes in the oval window.

The operation of excision of the drum membrane with the incus and malleus does not reach the seat of the trouble, and in the instances in which tinnitus has been relieved by it (as in the case of Burnett, of Philadelphia), the ankylosis of the foot-plate of the stapes, being yet very slight, was unintentionally disturbed by inadvertent manipulation, in separating the incus from the stapes. Such relief must necessarily be temporary, as the ankylosis will recur. To repeat, if the tinnitus be due to ankylosis of the malleo-incudal or the incudo-stapedal articulations, it may be relieved by proper manipulation short of excision.

Stapedectomy was promising, but the results were disappointing, owing to the fact that instead of detaching the stapes in its entirety, the crura were usually broken off, leaving the foot-plate still engaged, for in the affection considered, the crura become very brittle. Even if the foot-plate had always been removed with entire relief, the improved condition could not last, unless such treatment were adopted as would stay the further progress of the cause, which has been shown by Politzer[1] to be a "circumscribed primary affection of the labyrinthine capsule, exhibiting, post-mortem, in the region of the niche of the oval window, more or less sharp bony protuberances, covered mostly with normal mucosa, the neoplastic bony tissue gradually pushing aside the normal bone and attacking the oval window and stapes, producing ankylosis of the stapes. The round window may also be very much contracted."

The sixteen cases dissected, after a history which offered the clinical symptoms and usual course of what is called chronic dry catarrh of the middle ear, show that the foundation of the deafness and tinnitus is not in the mucosa at all, but is referable to a neoplastic hyperostosis of the bony envelope of the labyrinth. The development of the deafness dated mostly from many years back. Occasional sensations of pricking or tearing pain within the ear were complained of, but the chief characteristic was the constant and vehement tinnitus.

Two of the cases described suffered from gout; if syphilis was present it could not be determined; heredity, gout and syphilis are the suggested possible etiologic factors. The paper regards cure as nearly hopeless, but the internal use of iodin may prevent a too rapid advance of the disease. Dr. Politzer's communication seems to me the most important that has ever been made on this subject, and fully explains the failure of stapedectomy; in over twenty cases reported of this operation by Blake, of Boston, he found bony ankylosis at the oval window, which rendered the stapes immovable and prevented its complete removal in more than half the cases. If the operations had been successful, in order to make the result lasting, other means would be necessary, which adopted in time would make such an operation unnecessary; such means as would put an end to the disease process.

Stapedectomy is not without risk, because, by entire removal of the stapes an open channel is left between the tympanic cavity and the labyrinth, which is by nature placed securely beyond the reach of external noxious influences. Rationally, this ready access to the labyrinth must be a source of danger. In what way mischief would develop can only be surmised, as none seems to have been observed in the cases so far operated upon, because probably of the careful asepsis observed.

That loosening an ankylosed stapedial base-plate will improve hearing and relieve tinnitus beyond help in any other way, would seem to have been shown by an accident to one of my patients two years ago.

The wife of a western Senator, 35 years of age,

[1] Knapp's Archives of Otology, vol. XXIII, p. 255.

with progressive deafness, had improved under treatment, but became impatient of restriction and violated continuously the line of conduct prescribed for her. Her trouble increased upon her rapidly. About two years ago she was thrown from her carriage and "something snapped very loud; she heard at once very well." She came to me to say that the accident had cured her, when I could not do so. By persistently questioning me she secured the information that the comfortable effect was only temporary, that she was *not cured*. In a few months she was in much the condition previous to the accident. She had been thrown upon her head and an imperfectly ankylosed stapedial foot-plate was loosened by the jar. Why should a much more lasting effect be expected from a perfect stapedectomy?

Professor Politzer's view that iodin promises the least possible effect in such cases, accords with my clinical experience. It may be remembered that I asserted some years ago (*American Journal of the Medical Sciences*, April, 1887,) that the local use of iodin helped some persons; that it was my chief reliance in such cases. Among the causes of intracranial circulatory disturbances, one of the factors in the causation of tinnitus, have been named morbid conditions of the heart, liver or kidneys. It is not possible to separate such conditions from what Politzer considers a cause of the hyperostosis, gout. A paper by the writer, read at the Ninth International Congress, discusses the affection as related to arthritis deformans, a form of gout, and says: "Iodin vapor is our sheet anchor for topical application," aided by clothing, food and other items of general treatment, among which "the salicylates have had manifest influence in some cases;" the failures were supposed to be "osseous ankylosis, or disarticulation of the ossicula." This view, as Politzer's observations do, includes all causes of intracranial circulatory disturbances, except concussion, and materially simplifies the question.

Finally, as to the effect of treatment in these intractable cases, the cause of which is not superficial or easily removed. Until lately the constitutional exhibition of iodin has received no attention from me (why, I do not know), for good, if not sustained, results from its local use alone has been my experience. It is now being used, both locally and constitutionally, in a number of cases in which it had been used locally with favorable influence. The local use is continued, because it appears to determine to this region the effect of what is given by the stomach, and because, in my experience, its topical influence has nearly always been good. If the gouty materies morbi is responsible for the affection, as we have reason to believe, then diet, baths and clothing must enter into its management. And beside iodin, other drugs have a useful purpose; to name them and particularize their effect would require too much space for present consideration.

In 1886 a young woman, manifestly gouty, presented herself for relief of impaired hearing and distressing tinnitus. "The men and women of her mother's family, of her mother's generation, are all as deaf as posts." My watch, which can be heard at twelve feet by a normal ear, was heard at ten feet by her right ear; at one inch by her left ear. Accumulated cerumen being removed from the left meatus, hearing of the left ear was increased to ten feet. Accumulated cerumen being always due to some deep-seated affection, I advised that her ears be treated, but a few months later she went abroad, and I did not see her again until 1893, when, with the watch, the hearing distance of the right ear=10 inches; of the left=13 inches. There was no further accumulation of cerumen. Subjected to local and constitutional treatment March, 1895, W.H.D.D.A.=14 inches, S. A.=58 inches.

In all this time the tinnitus entirely ceased only for a short period to recur after a runaway accident, in which she was violently thrown to the ground; again, for about two weeks, while she was at the springs taking the baths. The hearing for the same watch now is, D. A.=26 inches; S. A.=10 feet. The improvement for the voice has been such that she has little difficulty in ordinary conversation. When last tested, though the windows were down, she was confused by the chirping of park sparrows in the yard. Her tinnitus varies.

A man, 50 years of age, whose tinnitus has been constant and unvarying; whose deafness was such that conversation had to be specially directed to him in a loud voice from two or three feet distant; whose record for other tests I have not at hand, and who has paid me an occasional visit for ten years past, has improved so much under the additional treatment for three months that he informed me at our last interview that he had attended "a board meeting," and heard what passed with little difficulty, and that his tinnitus had ceased for twelve hours after his previous visit.

It is my hope to make a report of interest on this subject at some future time.

SOME OF OUR LATE THERAPEUTIC RESOURCES.

Read at the Northern Tri-State Medical Association, at Toledo, Ohio, Dec. 10, 1895.

BY J. F. JENKINS, M.D.
TECUMSEH, MICH.

Within the past score of years there has been a new light thrown upon a large class of maladies which bear the name of contagious diseases. Plausible theories relative to the cause of many of them have given way to demonstrated facts. The consequence is that difierent methods of treatment have been adopted for the relief and cure of many of them. Modifying and attenuating the poison which produces the disease is a method originally wrought out by Pasteur, first in securing immunity in fowls against chicken cholera and lastly in the prevention of hydrophobia; and still it is a problem whose solution is engaging the attention of some of the best minds in the profession, which when completely solved will doubtless lessen the death rate of that class of diseases which has heretofore been the scourge of the human race in every quarter of the globe. Probably the most sanguine minds of the present day do not for a moment entertain the idea that contagious diseases will be completely eradicated in the future by the discovery of more potent therapeutic means, but we have every reason to believe that the death rate will be greatly reduced by better therapeutic agents, together with a more efficient code of sanitary laws, international in character, embracing every civilized country in the world; then the great epidemics of the past will never be repeated in the future.

Koch, proceeding along the same line of investiga-

tion that had been previously laid down by Pasteur' prepared from a cultured medium in which the tubercle bacilli had been grown, a preparation which he designated tuberculin. This remedy, of which so much was expected as a specific for tuberculosis in its various manifestations, has proved a failure as a specific, but in the hands of a few physicians it is used in properly selected cases, and by them with satisfactory results. Dr. Karl Von Ruck, of Asheville, N. C., uses tuberculin in minute and what he terms safe doses, but so far as the writer's observation goes, he does not define the amount given. Although tuberculin has not met the expectation of the profession in the treatment of tuberculosis, yet in the field of veterinary surgery it is a remedy of the utmost importance in the diagnosis of tuberculosis among cattle, and for this purpose it undoubtedly has its largest sphere of usefulness.

Prof. Klebs has separated a substance from tuberculicn which he terms antiphthisin, which is claimed by him to represent the curative, minus the poisonous properties of tuberculin. It is administered by Prof. Klebs, Dr. von Ruck and others in the early stage of tuberculosis before the tissues become broken down. Klebs states that its curative properties are due to its germicidal action on the tubercle bacilli. The report of tubercular cases treated by these gentlemen in which antiphthisin was the agent are interesting and instructive. Within the past year serum therapy has been brought to the notice of the profession by Prof. Maragliano, of Genoa, and Dr. Paul Paquin, of St. Louis. This remedy is undergoing investigation by the originators and a number of others are in the same field of research. Whether or not, future treatment of pulmonary tuberculosis by serum therapy will prove its utility is a problem yet unsolved.

Prof. Vaughan has been investigating the therapeutic properties of yeast-nuclein and finds that when this preparation is introduced into the system, that it has a decided germicidal action. The clinical report of cases which Dr. Vaughan has already published indicates that the remedy has a marked curative effect in the treatment of tuberculosis.

Dr. Vaughan makes the following statement in a recent communication to the writer: "I have not gone over all my cases, and consequently can give you only partial information. I have treated with nuclein forty cases in the second and third stages of the disease. Of these, twelve have apparently been greatly benefitted. All of these twelve have gained in weight and in some five of them the germ has at least temporarily disappeared. I have treated twenty-seven cases without cavities and all of these, with one exception, have been apparently markedly benefited. In a large majority of these cases the germ has disappeared from the sputum. I have treated five cases of tuberculosis of the urinary organs; four of these have apparently been cured. The fifth was temporarily benefited, but later the disease extended to other organs and the patient must soon die."

The most important remedial agent which has been brought to notice in the last decade is diphtheria antitoxin. Through the researches of Behring and Roux definite principles have been established for the treatment of diphtheria by serum therapy. The remedy has been criticised by many of the leading men in Germany, France, England and our own country. Notwithstanding doubts relative to the beneficial effects of antitoxin in diphtheria, it has been very largely administered in the hospitals of Europe and America. When an early diygnosis of diphtheria is made and the antitoxin treatment adopted within the first twenty-four or forty-eight hours of the attack, the result appears to be more satisfactory than when prescribed later in the disease; yet throughout the disease, both local and general treatment is recommended. No grave complications have been reported resulting from the remedy, although occasionally a troublesome urticaria takes place, which usually disappears in a few days. No renal or heart complications have been reported following the use of antitoxin, so far as the writer has observed. Recent statistics from German hospitals and private practice show that of 10,240 cases of diphtheria, in which 5,790 were treated by antitoxin, 4,450 were treated by other methods; the the death rate in the former were 9.4 per cent. In the latter 14.7 per cent., and in cases where antitoxin was given within forty-eight hours of the attack, the death rate was only 4.2 per cent. In a communication lately received from Dr. Hermann M. Biggs, Bacteriologist to the Health Department of the City of New York, he makes the following statement relative to the death rate from diphtheria:

"The death rate in New York has decreased about 40 per cent. since the use of diphtheria antitoxin."

Dr. Welch, of Johns Hopkins Hospital, states that the study of the results of the treatment of over seven thousand cases of diphtheria by antitoxin demonstrates beyond all reasonable doubt that antidiphtheric serum is a specific curative agent for diphtheria surpassing in efficacy all other known methods of treatment for the disease. It is the duty of the physician to use it.

Antitoxin will not cure every case of diphtheria, even if administered in the first twenty-four hours, but the consensus of opinion undoubtedly is, among those who have the largest clinical experience with the remedy, that its beneficial effects in the treatment of diphtheria is unquestionable. The dose of antitoxin is from 500 to 1,500 units, Behring's standard, or from 5 to 15 c.c. The dose will vary according to the age of the patient and the intensity of the disease. Under similar conditions it will require from 1,000 to 4,000 units in the treatment of a case of diphtheria. The syringe for injecting the serum should hold about 15 c.c.; the needle as well as the skin should be aseptic and the injection made in the subcutaneous cellular tissues, over the pectorals, or in the buttocks. From 100 to 400 units of antitoxin injected in a person, it has been observed, will give immunity from diphtheria for the period of four weeks.

From the history of reported cases the temperature falls in the course of twenty-four hours after the injection in mild cases, while in the more malignant it slowly falls after the second or third injection. The pulse rate is lessened, but not in proportion to the fall of the temperature. After the first injection in the majority of cases the false membrane ceases to spread and in forty-eight hours, as a rule, it becomes detached. Tracheotomy is less frequently demanded and intubation, when necessary, will seldom be required longer than twenty-four hours. Albuminuria is not so frequently observed and appears milder in character. The above conditions doubtless hold good in the majority of cases treated by

diphtheria antitoxin, of which there are many exceptions.

Brown-Sèquard introduced glandular extract in the treatment of disease. Within the past few years Dr. George Murray, of Newcastle-on-Tyne, has brought before the medical world the treatment of myxedema and its twin sister cretinism by the extract of the thyroid gland. The reported cases of myxedema in which the thyroid extract has been prescribed conclusively prove the beneficial effects of this remedy in a disease which has hitherto baffled all remedial agents. Several theories relative to the etiology of Addison's disease have their adherents. The latest and probably the correct one is the toxic theory. Prof. Schafer and Mr. Oliver have made a number of experiments on dogs and guinea pigs with the extract of the suprarenal capsule, and from these experiments we are led to believe that the future and successful treatment of this intractable disease will be the extract of the suprenal capsules.

The clinical history of a case of Addison's disease has been recently reported by Dr. Stockton, of Buffalo, in the *Medical News* (Nov. 16). The uncooked adrenals of a sheep were prescribed, of which the patient took in the form of sandwiches from one to two a day and sometimes three a day were taken without any unpleasant result. Five gallons of oxygen were inhaled three times a day. The health of the patient has gradually improved, which, in the opinion of Dr. Stockton, is due to eating the adrenals of the sheep.

A SAFE AND SURE METHOD OF REDUCING ENLARGED TONSILS.

BY H. W. KENDALL, M.D.
QUINCY, ILL.

The etiology of acute and chronic tonsilitis seems settled in the minds of all pathologists, but my experience points to a cause entirely overlooked by all the authors that I have consulted. Super-acidity of the prima viæ is in my opinion the essential cause of both the acute and the chronic disease, the catarrhal accidents being merely excitors.

I think that in every case of acute or chronic inflammation of these glands the salivary secretions will be found acid instead of alkaline, and that free doses of potassium or soda locally applied and ingested will give most rapid relief. The anatomy of the tonsil is well understood, but the great variation in the size and number of excretory ducts has not been particularly pointed out. These ducts are greatly enlarged in either acute or chronic hypertrophy of the glandular structure unless contracted by astringent or caustic applications. Since the general disuse of astringent gargles, suppurative cases are rarely seen. Cauterization, once the general practice, is now almost abandoned for the reason that it is obstructive and converts the acute into the chronic condition.

We have an efficient cauterant and at the same time an antiseptic and alterant in pure hydrochloric acid, which is always friendly to human flesh. This is the agent that I have found so efficient in reducing enlarged glands in all parts of the body, but the method of using it is the particular point that I wish to present in this short paper. My method is the use of capillary glass tubes (Bohemian or Whital and Tatum's glass), one-eighth of an inch caliber, heated in a Bunsen flame and drawn to a point, the shaft of the drawn part two inches long with caliber one sixty-fourth of an inch, broken off and fire polished. Now if the shaft of the tube is five inches long the drawn part will hold, after dipping in a fluid, one minim; if the larger shaft is increased in length it will hold more. When the point of this tube touches any substance it will deposit a fraction of the drop; by long contact it will deposit all that it contained.

I dip these tubes into pure fuming hydrochloric acid and push them into the excretory ducts of the tonsils, three in each gland at each sitting, twice a week. This operation is painless and produces no inflammation or swelling. Five or six applications are sufficient for moderately enlarged glands. Nitric acid used in the same way will produce swelling and sloughing. Chromic acid so used is rapidly effective, but I abandoned it forever after producing tetanus in a malignant case.

The advantages of this mode of application are the ability to deposite a definite and minute amount of acid and avoidance of strangulation and choking effects of the fumes. After ten years' experience with this treatment I can quite positively say that in my opinion tonsils ought never to be removed with knife or scissors. By careful, gentle and rapid manipulation of the first application any child will submit to the treatment willingly.

If a local anesthetic is desired a saturated solution of bromid of potassium and bicarbonate of soda is better than cocain because the latter produces subsequent delirium or dizziness with asthmatic breathing in many cases.

DACRYOCYSTITIS.

Read before the Falls City Medical Society.

BY P. RICHARD TAYLOR, M.D.
PROFESSOR OF MATERIA MEDICA AND THERAPEUTICS AND DEAN OF THE HOSPITAL COLLEGE.
LOUISVILLE, KY.

Dacryocystitis is an inflammation of the lachrymal sac, generally accompanied by a catarrhal condition of the entire lachrymal passage. The disease seldom, if ever, originates in the sac, but is a complication of trouble in the nasal passage induced by obstruction of the lower opening of the duct, or inflammation of the nasal membrane, or periostitis. These are the principal causes, and almost invariably originate below and extend upward to the sac. Inflammatory conditions of the conjunctival sac rarely produce dacryocystitis.

The disease is easily diagnosed by tenderness and swelling over the sac with edema extending to the lids, swollen caruncle with epiphoria, and puncta swollen to twice the usual size. This condition always develops stricture which, as a rule, is situated below the sac, except in those cases where the duct is obstructed at its lower opening by deformity of the turbinated bones closing in the nasal end of duct. Removal of the turbinated bone will allow the sac to empty its contents.

When dacryocystitis has once developed and pus has formed, a stricture will certainly result. The pus can be evacuated with little difficulty by making firm pressure with the finger from above or below, forcing the pus from the sac into the eye or into the nasal cavity. But the evacuation of the pus is not our sole object. Our chief aim is to get rid of the stricture.

We have the sounds and probes, blunt and bulb

pointed, with which, after slitting the puncta, we are enabled to dilate the offending stricture. Experience with these instruments has taught us that dilatation of the stricture does not cause its complete absorption, since a simple *coryza* may produce a recurrence of the trouble. We might cut the stricture and continue the dilatation with probes. It is an easy matter to evacuate the pus, to daily probe and wash the passage until it is seemingly well. Yet it will be certain to recur unless the probing is continued until the stricture is absorbed, which is seldom, if ever, accomplished by this method. The radical cure depends on keeping the passage open with free drainage, which can only be accomplished with a tube.

Some authorities recommend a lead wire with one end in the nasal cavity and the other projecting and bent downward at the inner canthus, and worn until the stricture is absorbed.

Since probing is a failure, when one of these cases falls into my hands I always split the punctum, and, with a probe-pointed bistoury or a spear-pointed knife with a malleable shank, cut the stricture. Recently, I have been using a double-edged Graefe's cataract knife. It is passed through the passage into the nose and the stricture is cut in several places by turning the knife before withdrawing it. I cleanse the tract with an antiseptic solution and put in a lachrymal tube at once. The passage can be washed while the tube is in position. Epiphoria can only be relieved by a tube which will perfectly drain the conjunctival sac. All lachrymal tubes are made on the same general plan, but the one which I have devised and which I now show you is somewhat different. It meets the requirements more fully than any I have yet used.

This tube is seven-eighths of an inch long and three-eighths inch angle, and can be made any size and of any metal. It differs from all others in having a lateral slit on both sides of the short end, leaving a duck bill spout with upper and lower blades, both of which are to be beneath the surface of the lids or entirely in the passage and hidden from view. In this way the slit prevents the soft tissues from closing the opening of the tube or hindering the passage of the tears through the tube. It can be worn indefinitely.

If the stricture should not be absorbed, or if the dilatation with probes is deemed necessary, they can be easily passed down by the side of the tube. I have nine of these tubes now in use. The one I showed you a few moments ago I removed on yesterday. It had been worn over two years by a book-keeper without the slightest annoyance and without the knowledge of his office associates, and also without a recurrence of the trouble.

Believing the probes and dilating methods to be a failure, I operate and introduce a tube as soon as these cases come under my care. If dead bone or tumors are present, they should be removed and the tube introduced.

A SIMPLE PRISMOMETER.

BY SHIRLS JACKSON, M.D.

PITTSBURG, PA.

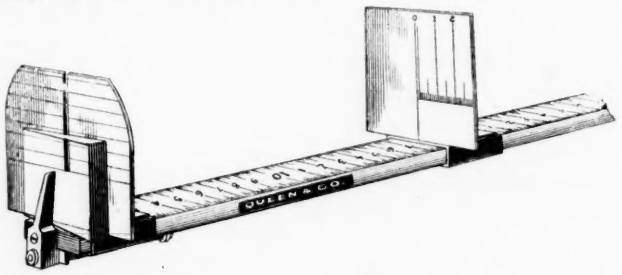
It is not intended here to enter upon the thorny discussion of one-fourth degree prisms, but to call attention to the frequent errors of one-half degree or more in prisms of low degree, bearing the same number, and reposing in the same trial-set, the statements of the manufacturer to the contrary notwithstanding.

However accurate the trial-lenses may be, little thought seems to be given by the manufacturer to the accuracy of the prisms. Frequently the prisms are rotated, and the base apex line wrongly marked that the prisms may neutralize. The effect of these errors upon diagnosis is obvious.

While the difficulty of grinding prisms to a predetermined refracting angle has necessitated the measurement of each glass separately to determine the angle of deviation, with which alone the ophthalmologist is concerned, nothing but expensive and elaborate appliances have been offered with the assurance of anything like exactness.

Those who have once tried a prismometer are aware of its convenience and accuracy, but however useful in the laboratory, the more elaborate appliances are out of the question in practical ophthalmology.

For the surgeon who has only an occasional use for a prismometer and for opticians who care to fill prescriptions for prisms, accurately, the simple instrument shown in the illustration is made by Queen & Co. from a model used by the writer. It measures the angle of deviation in prism-dioptres as advocated by Prentice and is a modification of his instrument. From the reading in dioptres, the angular deviation in centrads or degrees and the value of the refracting angle may be known at a glance, from the accompanying table of equivalents.



The prism to be measured is clamped between the end-gauge and the face-plate, as shown in the illustration, a spring holding the prism in position. Sighting through the slot in the face-plate, and holding the instrument in such a position that the prism bi-sects the observer's pupil, two images of the index-plate will appear. The prism is now rotated until the tops of the two images form one unbroken, horizontal line. The base-apex line is then indicated by one of the horizontal lines upon the face-plate and from one of these lines the base-apex line may be traced in ink upon the prism for future reference. With the prism remaining clamped in this position, and the upper edge of the prism still bi-secting the pupil, the index-plate is again observed and as the zero-line is red, and extends below the scale, its deflection upon the scale is readily noted. The index-plate is glided along the bar until the zero-line has been deflected to the one-centimeter line[1] upon the scale. The deviating power of the prism may then be read in dioptres, tenths, and hundredths, from the graduated bar at the point where the index-plate is stopped.

[1] A greater or lesser unit of deflection than 1 centimeter upon the index plate may be chosen for convenience, remembering to increase or diminish accordingly the reading from the bar; as with a 15° or 20° prism a deflection to the 2 centimeter line upon the index plate may be allowed and the reading taken as before from the bar, but it will have twice the value and must be multiplied by two. With fractional prisms below 1° a deflection to the 1 millimeter line only, should be allowed. As the reading will be ten times too great the decimal point must be moved one place to the left, a reading of 2.50 being written .25 P. D.

With ordinary ophthalmological prisms this is all that is necessary.

To center a lens, clamp it in the instrument, and slide the index-plate in focus. The zero-line will appear broken. Rotate and shift the lens until the zero-line is strictly rectilinear. Draw a line upon the lens corresponding to the slot in the face-plate. Rotate the lens 90 degrees and repeat the operation. The intersection of the lines marks the optical center of the lens, and if a cylinder is present, its axis exactly corresponds to one of these lines. If the geometrical center of the lens does not coincide with the optical center, prismatic effect is present. Marking the geometrical center in red and placing it directly over the slot in the face plate, the zero line will appear broken. Several square prisms are slipped behind the face plate; the one that restores the continuity of the zero line gives the deviating power of the contained prism. The power of the contained prism at any point upon the lens may be determined, and marked from the slot. If the neutralizing prisms have not the exact intervals required, or if square prisms are not at hand, the next interval above is placed behind the face plate, and rotated until the zero line is restored. Care being taken to keep the prism exactly in this position, the lens is removed, and the prism measured in this position. The exact deviating power for that point on the lens that was opposite the sighting-slit is then known.

This use of neutralizing prisms is more than sufficiently accurate, and eliminates the calculation necessary to correct a direct reading from a spheroprismatic lens.

Opticians keep in stock, packages of uncut (square) prisms, from which, owing to the usual variations from exactness. the surgeon may select with the instrument, a set of metric prisms that when edged up, will be exact, inexpensive and of all desirable intervals.

SELECTIONS.

The Urine After Anesthesia.—The influence of various general anesthetics upon the processes of metabolism in the body has been repeatedly studied both upon clinical material as well as by means of animal experiments. In this way the advantages and dangers of this or that anesthetic have been more or less thoroughly established. The action of chloroform and ether upon the kidneys has received special attention. Post-anesthetic albumin, uria and glycosuria have been repeatedly investigated, with the result that the liability to nephritis after anesthesia in persons with healthy kidneys has been shown to have been in the past very much exaggerated. Among the recent contributions upon this important topic may be mentioned Weir's[1] "Studies of the Influence of Ether Upon the Kidneys." In 1890 Weir[2] presented the results of an examination of forty cases of ether anesthesia with the result that in about one-quarter of the cases in whom the kidneys were previously healthy slight transitory albuminuria occurred after the narcosis. Feuter's[3] conclusions, based on clinical and experimental observations, was that ether has no perceptible influence on the healthy animal kidney, that it is not dangerous in persons whose kidneys are slightly diseased, and that albuminuria but very rarely occurs after ether anesthesia in persons with healthy kidneys. Butler[4] found albuminuria but once after 500 ether narcoses. Körte[5] found albumin in the urine only six times in 600 narcoses in healthy persons. In seven cases where albumin preëxisted in the urine it was not increased by the etherization. Wunderlich[6] concludes that in an already existing case albuminuria is frequently increased by an ether narcosis; that this is twice as common in chloroform anesthesia in the proportion of 11.5 to 6.9 per cent. Wunderlich says that an ether nephritis may be excluded from surgery. Wood[7] thinks that if the kidneys are diseased, increased "irritation" may occur from ether narcosis; in animals Wood found etherization to produce cloudy swelling of the renal epithelium, but Selbach[8] found that prolonged etherization, repeated on many successive days, never produced nephritis, and out of ten animals, slight fatty degeneration of the renal epithelium was found but once. Weir's[9] last communication upon this topic contains the following summary of results:

1. Normal before and after	254 cases.
Abnormal before, but without increase in albumin or casts after	7 cases.
Abnormity lessened after	3 cases.
	264 cases.
Or about 87 per cent.	
2. Normal before, afterward abnormal	31 cases.
Abnormal before, abnormality increased	8 cases.
	39 cases.
Or about 13 per cent.	

Weir also studied 112 cases that had a record of the temperature after etherization and came to the general conclusion that elevation of temperature, the cause of which it was thought would aggravate the work of the kidneys and lead to, in conjunction with the narcosis, abnormal excretions, does not appear to have any positive influence on the point. Etherization in the vast majority of cases in normal kidneys, and even in abnormal kidneys, consequently does not bring about any detrimental effects as far as albuminuria is concerned. Concerning post-anesthetic glycosuria, it may be said that Wunderlich[10] and others have never been able to find sugar after narcosis, where glycosuria did not exist before.

Kast and Mester[11] report that after prolonged chloroform narcosis in healthy individuals a prolonged disturbance in the metabolism of albuminous substances occur similar to those induced by phosphorous poisoning, may develop a sulphur-containing substance, similar to cystir, being excreted in considerable quantities. Becker,[12] in Bonn, described some instances of rapidly fatal diabetic corna subsequent to narcosis, which he was inclined to believe were due to acetonurnia, and this observation gave him the idea to investigate the question whether or not narcosis can lead to the production of acetone in healthy persons. Becker,[13] therefore, set about to systematically examine the urine of practically all the patients anesthetized in the surgical clinic of the Bonn University, for sugar, albumin and acetone before as well as after the narcosis. The method used for the demonstration of acetone was the qualitative test of Legal, which is made as follows: To a few ccm. of filtered urine are added a few drops of a freshly prepared, 10 per cent. watery solution of nitro ferrocyanide of sodium, the mixture is then made alkaline by adding a solution of sodic or potassic hydrate when a burgundy-red color appears. Then a few drops of strong acetic acid are added and, if acetone be present, a purplish tint is formed at the juncture of the acid and the mixture. Becker made the unexpected observation *that in the majority of healthy persons there arises an acetonuria of varying duration after narcosis.* The following table will give a birdseye view of his results:

Anesthetic.	Number of patients.	Positive.	Negative.
Ether	195	132	63
Bromether	16	7	9
Chloroform	5	5	—
Ether followed by chloroform	33	22	11
Bromether followed by ether	2	1	1
	251	167	84

The duration of the narcosis did not seem to have any influence on the occurrence of the acetonuria; the same is also true as regards the nature of the disease and of the operation—whether bloody or not—in children acetonuria seemed to be more frequent and also more marked than in adults. As a rule the acetonuria disappeared on the second, third or fourth day, but in some instances it continued for eight or nine days. In a case of perineal section it was possible to show that twenty minutes after the beginning of the anesthesia the urine already contained acetone, having previously been free from this substance. In a number of cases containing acetone in the urine before the narcosis the acetonuria was found to be increased after the operation, and

in three diabetics the narcosis increased preëxisting acetonuria very considerably.

Concerning the significance of acetonuria in general, it has been shown by v. Jacksch[14] and others that it arises from the disintegration of albuminous substances, and consequently post-narcotic acetonuria is a symptom that points to an increased destructive metabolism of albuminous compounds during and also after the anesthesia. In healthy individuals this post-anesthetic acetonuria seems to be without any evident dangerous consequences, but in diabetics the increased excretia of acetone after anesthesia shows that in such cases narcosis is connected with greater dangers than in healthy patients.

In one case of bromether intoxication, abnormally large quantities of acetone were excreted, which led Becker to believe that in this case serious disturbances of tissue matabolism had been induced. Finally, the interesting and new observations by Becker upon acetonuria after anesthesia may be summarized in these conclusions:

1. In healthy persons acetonuria, lasting from a few hours to a few days, may appear after narcosis. In two-thirds of the cases, Legal's reaction with filtered urine gave a positive result.
2. Preëxisting acetonuria is increased by the ordinary anesthetic agents.
3. In a case of severe bromether intoxication excessively large quantities of acetone were excreted.
4. Acetonuria after anesthesia is a symptom of increased disintegration of nitrogenous compounds.

Third Annual Report of the Hospital and Dispensary at Chemulpo, Korea.—The third annual report (1894) of St. Luke's Hospital and Dispensary at Chemulpo, Korea, has been received from Dr. E. B. Landis, the physician in charge. It states that, owing to the fears of the inhabitants caused by the presence of Japanese troops, many fled from the city, and during July and August half of the native houses in Chemulpo were empty.

The cases treated number 4,463; of these 159 were of the respiratory organs, 407 of the intestinal tract, 16 of the urinary organs, 121 diseases of the skin, 213 injuries, deformities, etc., and only 50 cases of venereal diseases. The term pestilence is used because it is a translation of the native word; there were 68 cases of the disorder. The disease occurs in the spring and early summer, and the mortality is very high. The fears of the natives cause them to avoid it as much as possible. Relatives are compelled to leave the house until the patient recovers, if he is fortunate enough to do so.

No one can come in contact with the natives without seeing evidences of the ravages caused by smallpox. People blinded, crippled, and pockmarked are seen everywhere. An increasing number of children are brought for vaccination. The Koreans have a method of inoculating children by introducing virus from a smallpox patient into the nostrils of the child; but the mischief caused by this is only exceeded by that of the disease itself.

The native treatment of a forming abscess is by a kind of sticky mass, resembling shoemaker's wax, the chief ingredients of which are centipedes and pine-tree sap. This is applied to the forming abscess. The pus can not find its way out through this, and therefore burrows down through the more yielding tissues and finds its way out through half a dozen openings. If not seen and properly attended to, it sometimes goes down very deeply, resulting in periostitis and necrosis. When a patient presents himself for treatment there is generally a mass of diseased flesh with several sinuses leading down often quite deeply. This must be fully incised and then washed out, antiseptically.

A number of cases under the head of incised wounds were caused by the stem of the native pipe, a long piece of bamboo with a tapering mouthpiece of metal perforating the back of the throat. This accident is caused by a man's stumbling or falling while smoking, the stem being forced through the tissues, often with fatal results.

Among the cases reported was one of leprosy. The patient was a man who came from the south, begging for relief. It being impossible to place him in the hospital, a temporary place was obtained for him at some distance from the settlement. The case was one of tuberosa form; leontiasis was very marked. When he came the disease was quite advanced, with nodules scattered all over his face, and ulceration of the hands and feet already begun. He was treated with Chantmoogra oil and iodids, but without avail; he gradually grew worse and finally died.

Sanitary matters among the Koreans are in a very rudimentary state. The foreigners and Japanese are not teaching the Koreans any very useful lessons in this respect. Great care is taken to keep the streets in good order, but the gutters, or so-called drains, are used as cesspools or places for dumping all sorts of offal. Once in a while a pretense is made of cleaning them, but the only time when they are in proper condition is when the rainy season washes them out. Dr. Landis says the coming year (1896) will be an unhealthy one. The eight Provinces as well as the two large islands of Quaelport and Kanghoa were represented in the hospital during the year. Boats from all parts of the country are continually arriving, and important medical missionary work is being successfully carried out.

Dr. Landis has given the most untiring devotion to his duties, and his influence in the cause of medical science has been very great.

1 New York Medical Journal, Nov. 16, 1895.
2 Loc. cit., March 1, 1890.
3 Deutsche Zeitschrift für Chirurgie, Bd. 29.
4 Langenbech's Archiv, Bd. 40.
5 Quoted by Weir, loc. cit.
6 Deutsche Zeitschrift für Chirurgie, Bd. 11.
7 University Medical Magazine, 1894.
8 Dissertation, Bonn, 1894.
9 Loc. cit.
10 Loc. cit.
11 Zeitschrift für Klin. Med., Bd. 18.
12 Deutsche Med. Wochenschr., 1894, No. 16.
13 Virchow's Archiv, Bd. 140, Heft 1. The details of these investigations are also contained in an Inaugural Dissertation by Greven, Bonn, 1895.
14 Ueber Acetonuria und Diaceturie, Berlin, 1885.

SOCIETY PROCEEDINGS.

Chicago Academy of Medicine.

Regular meeting held at the Union League Club Dec. 15, 1895.

DR. A. E. BALDWIN was chosen Chairman.

The first paper was read by Dr. William L. Ballenger, entitled.

ANGIO-NEUROTIC EDEMA.

He said that angio-neurotic edema was a so-called disease characterized by an acute, circumscribed, non-inflammatory swelling or edema of transient duration. It has been variously named, according to writers' ideas of etiology, pathology or symtomatology, as acute circumscribed edema; acute idiopathic edema; essential edema; periodic swelling; urticaria tuberosa; giant urticaria, or giant swelling; acute non-inflammatory edema, etc., etc.

Symptoms.—The edema appears suddenly—sometimes with and sometimes without prodromal symptoms—and is transient. A common seat is the face, the eyelids being most frequently affected. The lips and cheeks may also be involved. The Schneiderian membrane, the pharynx, uvula, epiglottis, larynx and lungs may be the seat of swelling. The hands, arms, legs, genitals and trunk, indeed, any of the mucous membranes and any portion of the skin may be selected as the site for edematous swelling, although it seeks by preference the most lax parts. It may appear in one part and later appear in another. It is usually associated with other symptoms or diseases, as hay fever, urticaria, headache, gastro-intestinal disturbances as watery vomiting and colicky pains, itching and redness.

Etiology.—The etiology may be studied under the following subdivisions: 1. Predisposing causes, as *a*, heredity; *b*, previous and present condition of disordered health; *c*, overwork either mental or physical; *d*, exhaustion from disease, exposure or exertion; *e*, and last, but not least important, the neuropathic taint.

There is a growing conviction among neurologists that the reflex centers have been much abused by writers in accusing them of much that properly belongs to the central nervous system. We are coming more and more to recognize the intimate relationship existing between mind and matter, and perhaps many phenomena which we attribute to what may be styled the animal mechanism, have their origin in cerebration, though the act be an unconscious one.

While there is undoubtedly a close relationship between urticaria and simple acute edema, as there is between all neurotic phenomena, yet there is a somewhat different pathology attending the various manifestations. Some of the cases now referred to as angio-neurotic edema are probably cases of urticaria and tend to confuse the judgment of the student. In Matas' case there was malarial toxin as an exciting cause, and

the tone of the tissues was impaired by the ravages of long-continued disease until the soil was ripe for angio-neurotic manifestations. The edema recurred daily from 11 to 12 A.M., on the upper lip, causing great disfigurement during the brief time of its stay. It was finally cured by quinin as for malaria.

Osler's classic study of five generations, shows one affected with angio-neurotic edema in the first generation, one in the second, five in the third, ten in the fourth, and three in the fifth. Edema was not inherited by these people, but an impaired cell structure and activity which manifested itself as an edema was inherited. Along with this tendency, environment and suggestion acted as exciting causes.

The author then closed his paper with a report of a case coming under his own observation, and added that he believes it is a mistake to write or speak of angio-neurotic edema as a disease, for it is not a disease; it is but an expression, a symptom of some stimulus acting upon impaired cell structure.

DISCUSSION OF DR. BALLENGER'S PAPER.

DR. G. FRANK LYDSTON—Dr. Ballenger's paper is so very complete that there is very little to add to his remarks. I agree with him in the assertion that in so-called angio-neurotic edema some underlying organic peculiarity of the individual is essential. I believe the same proposition is true as regards ordinary urticaria. I have long been satisfied in my own mind that so-called giant urticaria and ordinary urticary are congeners. I have no theory to advance regarding the essential condition underlying these forms of skin eruption. There is perhaps, after all, no better term than idiosyncrasy which can be used at the present time to explain the varying results of the ingestion of various toxic substances in different individuals. There must be some explanation for the fact that of several individuals who have ingested shell-fish in a more or less advanced stage of putrefaction, or over-ripe tomatoes, one should develop severe urticaria, while the others escape. The toxic materials which enter the system in each instance are precisely the same, granting that a series of individuals ingest the same kind of objectionable food. It is a matter of common experience that in certain individuals the freshest shell-fish will invariably develop urticaria. We can not explain this any more than we can explain why certain individuals who inhale the pollen of plants, or on entering a room in which a small amount of powdered ipecac is floating in the atmosphere, develop symptoms similar to hay fever. These symptoms referable to the mucous membrane, it seems to me, are congeners to urticaria. It is useless to deny the existence of so-called idiosyncrasy in the direction of a peculiarity of nervous organization which predisposes to urticaria and its congeners. The effect of toxins as an explanation of its exciting cause, is compatible to the effect of various drugs which we use in medicine. We know that copaiva, quinin and many other drugs produce eruptions in certain individuals, and there is nothing, so far as I know, but individual predisposition to explain this unless the vicarious functionating of the skin necessitated by imperfect renal action, the loss of balance manifesting itself under these circumstances by dermal irritation. There are certain local influences which will bring about urticarial manifestations without the necessary intervention of individual predisposition. This is eminently true of insect bites.

I had an excellent opportunity to study the effects of insect bites during the riots of the summer of 1894. A number of the troops under my charge at the Union Stock Yards were bitten by horse-flies, which were abundant and particularly voracious in that locality. I had fifteen cases of septic bites which I had under careful observation. The first manifestations were marked localized edema, with the characteristic waxy semi-translucent appearance of the urticarial wheal. This was followed by an inflammation of an erysipelatous character, with suppuration and considerable destruction of cellular tissue quite similar to that which is presented by ordinary carbuncle. Taking insect bites as the basis for argument, we have also another evidence in some cases of the importance of individual predisposition. We find, for example, that ordinary mosquito bites in some individuals result in the formation of large urticarial wheals, while in others slight or no irritation results. Observations of insect bites of the skin on the effect of urticarial eruptions are important in reference to the possible relations of toxins to ordinary urticaria. Reverting to drug eruptions, as an illustration of individual predisposition I recall the case of a lady who developed, after the application of belladonna ointment of mild strength, an erythematous eruption which practically covered the entire body, and was as marked as is ordinary cutaneous erysipelas. I experimented on three different occasions with the same result.

It has seemed to me that gastro-intestinal irritation is by no means essential to the production of urticaria; indeed, in some cases in which marked urticaria develops as a result of the ingestion of certain unwholesome food subtances, no symptoms of gastro-intestinal irritation whatever are present. I know, for example, of a gentleman who, upon the ingestion of a small quantity of honey, will develop a severe urticaria. Another case, under my observation, would have severe gastralgia upon the ingestion of so small a quantity as a half-teaspoonful of honey. The gastralgia would come on speedily after the ingestion of the honey, and the attacks occurred too frequently under my own observation to admit the possibility of error.

The term angio-neurotic edema is by no means satisfactory, but if the underlying condition in ordinary urticaria and so-called giant urticaria is the same, I believe it would be best to classify them as similar conditions. The term angio-neurotic edema is as comprehensive as anything that has thus far been suggested.

DR. W. L. BAUM—The subject of angio-neurotic edema is an extremely interesting one, not only on account of the various conditions under which it may appear, but also because of the many articles which have been written from time to time relative to its etiology. The vast majority of these cases otherwise enjoy good physical health. Neither the seat of the lesions, nor their extent, shed any particular light upon the etiology. I can hardly agree with Dr. Ballenger in the statement that the condition is necessarily due to an alteration in the endothelial cells of the vessels, for if there were some abnormal changes then like etiologic factors employed at various times would be always bound to bring about like results. We frequently find that an emotional disturbance will bring about a sudden attack of angio-neurotic edema. Take, for instance, the case reported many years ago where an improper proposal was made to a young lady at a dance; within a few minutes her whole body was covered by a urticarial (giant) eruption. Many such cases have not only been reported, but are seen in every-day practice by the dermatologist, and are striking illustrations of the fact that the emotions and neurotic disturbance in general may have a powerful influence in bringing about eruptive conditions. On the other hand, it must not be forgotten that a large number of these cases develop after the ingestion of certain foods, and a great variety of foods may produce angio-neurotic edema.

As regards hereditary influences, it can be taken for granted that the changes, whatever may be their character or idiosyncrasies, are purely of a neurotic type. Whether it be a reflex condition resulting in dilatation of the vessels through paralysis of the vasomotor contractor nerves, or an irritation of the vasomotor dilator nerves, will probably never be satisfactorily demonstrated. The fact remains that the vessels do dilate, and that we have a serous, sometimes a sero-sanguinous exudate present, which gives us a variety of symptoms which may be brought about by the same etiological factor. Very frequently the gastric disturbances, which are so often named as the exciting causes, occur subsequent to the appearance of the edema. If we take into consideration that this change occurs sometimes on widely separated portions of the skin, and sometimes upon almost all portions, it is reasonable to suppose that the eruptive condition also occurs upon the mucous membrane of the nose, etc. For instance, we frequently notice that the soft palate and uvula are involved in this condition, and undoubtedly the condition occurs in the stomach, as well as intestinal tract, as exemplified by frequent attacks of enteritis; and the cerebral symptoms can be easily accounted for on the supposition that similar local conditions are also produced. There is no doubt in my mind that the angio-neurotic condition is in itself only a symptom, and that its existence is not dependent upon structural changes, but upon neurotic conditions, and it may have as its exciting factors a large and almost endless variety of causes.

DR. H. M. BANNISTER.—I have been very much interested in Dr. Ballenger's paper. When I published my case at first, it was simply because it was novel to me, and I have lately congratulated myself on the judiciousness of the title I then gave it: "Erythema or Urticaria," more especially since reading within the last two or three days an article by Dr. Osler, in which he refers many of these angio-neurotic conditions back to the types he discusses in his paper on exudative erythema, and, I believe, he refers his celebrated hereditary angio-neurotic family to this form. Henoch's first case of what I take it has been called Henoch's purpura, and which I stated was given as purpura, is included by Collins and Lovett in the literature of angio-neurotic edema, which literature, I believe, has been made to include many cases of conditions very different from each other, and which are not properly to be classed under this head.

As regards the pathology of the disorder, I presume I should agree with Dr. Ballenger in the main, though I have considered most of the cases as belonging to or closely related to urti-

caria. My last paper was written because the disease had been adopted by, or had been thrust upon neurologists, and it was published with the idea that it might help to refer it to its proper place. I believe it to be a neurosis of the integuments, but I doubt whether dermatologists themselves know how to properly place it as a distinct clinical entity.

DR. HUGH T. PATRICK—I have been greatly interested in the satisfactory paper of Dr. Ballinger, and he seems to have left very little room for criticism, but I would have been better satisfied if he had more clearly defined angio-neurotic edema. This slight dissatisfaction has been intensified by the discussion. We have had classed under this head almost everything from edema of glottis to hereditary trophoneurosis, and from the tumefaction of insect bites to simple and giant urticaria. My own difficulty has been to conclude what is and what is not to be classed as angio-neurotic edema. I had hoped to see the line drawn this evening. I have not been able to do so myself, for we can follow these troubles step by step from simple transitory blushing and paling to the most pronounced and persistent edema and pseudo-edema. In any normal individual, sharply stroking the skin with a blunt instrument will cause first a white line, and then a red one; in some peculiarly susceptible it will cause an elevation, and in others decidedly abnormal it will cause marked swelling which will persist for hours and can be reproduced after twenty-four or forty-eight hours by simply rubbing the surface with the hand. In the same way, the bite of an insect will produce in one person a slight wheal, in another a swelling and edema of the entire extremity. An auto-intoxication from the gastro-intestinal tract will cause in one, slight malaise; in another an outbreak of urticaria. I saw some time ago a lady subject to facial neuralgia, and every attack was accompanied by a marked edema of the face, as in a person with the proper predisposition, or, as Dr. Lydston prefers to call it, idiosyncrasy; a very slight irritation from without or within may be the determining cause of a localized edema, so this same result may be induced by an influence emanating from the brain, not a toxic but a psychic cause; in other words, a local edema, exceedingly difficult to separate from angio-neurotic edema, may form part of the symptom-complex of hysteria. This has been known since the days of Sydenham and is clearly emphasized by Brodie in his interesting little monograph on Local Nervous Affections, published, I believe, in 1837. Here, too, we can trace the degree of disturbance from simple blushing and perspiration from mental causes through erythromelalgia and Raynaud's disease, some cases of which have been conclusively shown to be of psychic origin, to transient and even persistent edema. In substance then, I must agree with the reader of the paper, that angio-neurotic edema may exist in many different ways. I do not think it can stand even as a clinical entity. For its definite classification we need facts, and these facts are not yet forthcoming.

DR. BALLENGER (closing)—It was with much hesitation that I presumed to write upon a subject which is generally conceded to belong to the neurologist and dermatologist, but many of the so-called angio-neurotic edemas occur in the nose and throat, and therefore should claim my attention as a rhinologist and laryngologist.

Dr. Bannister believes the so-called angio-neurotic edemas are but forms of urticaria. I agree with him to the extent that many cases reperted as urticaria are, indeed, not urticaria, but are cases of angio-neurotic edema. This is suggested in the thesis. While the exciting causes and possibly the predisposing causes may be almost identical, yet there is a difference in the pathology. Dr. Baum questions the impairment of the intima of the small blood vessels. Now, if we accept the simple vasomotor theory we must look upon the vessels as so much elastic with epithelial plates or brick, which regulate the amount of nutrition which is allowed to ooze through. When the vessels are dilated the plates are pulled apart and a free flow of lymph follows. I can not bring myself to think of the epithelial cells lining the vessel walls as mere inert matter acting as impediments to the transudation of lymph, for when we remember that they throw out arms or finger-like processes and embrace bacilli, we must concede a high degree of autonomy, and may reasonably expect an impairment of them to result in a modified functional activity. An acute hyperemia does not bring about an edema even though it be quite prolonged. I am well aware of the fact that I can not prove my position and that it can not be disproven. I only hold to the hypothesis which to me seems in harmony with the known facts.

In reply to Dr. Patrick's query as to why I did not more specifically define angio-neurotic edema I will say that I look upon it, not as a disease to be defined but as a symptom, an expression of an exciting cause acting upon impaired (not dead) tissue. In other words, an exciting cause alone can not produce an acute edema; there must co-exist an impaired cell structure in the blood vessel walls. By impaired cell structure I mean that its normal activity is interfered with, and not that its structure is destroyed. This impairment may continue for only a short time and may occur through some trophic process which may have its origin from some impression made upon the brain; or, as is more common, it may arise from irritation of the nerves or centers controlling the cells, or possibly from direct irritation of the cells, although from the light of recent investigations made by Metchnikoff, this is less prebable.

In conclusion, I believe angio-neurotic edema should not be thought of, spoken of, or written about as a distinct clinical entity. It is my habit to think of it as an acute transient circumscribed edema resulting from some stimulus either psychic, chemic, or traumatic, acting on neurotic or impaired animal structure.

DR. E. A. HALSTEAD read a paper on

FLOATING BODIES IN JOINTS.

He said by floating bodies in joints, or, as they are frequently termed, joint mice, he meant bodies of varying structure usually composed of bone, cartilage, masses of fibrin or fat, or fibrous tissue which are either loose in the joint or are attached to some part of the joint surface by pedicles. By far the greater part of these bodies is found in the knee-joint, so that when we speak of joint bodies we usually refer to the knee as the seat of disease. They next in frequency are found in the elbow-joint, and rarely in the ankle and wrist. The explanation of their frequent occurrence in the knee-joint is that the joint has a very large surface, and that by its position it is greatly exposed to traumatism.

The first systematic study of these bodies was made about 250 years ago by Pechlin, a Swedish surgeon. Since then numerous cases have been reported and a great many theories advanced in explanation of their origin. Of late years, careful microscopic examination of specimens removed by operation, and found on postmortem, has done much to clear up doubtful points in the etiology of these peculiar bodies.

The author reported three cases which had lately come under his observation.

Etiology.—The cause of loose bodies in the joints has been a much disputed question. Of late considerable advance has been made in determining the exact causation of individual cases. In the past, most writers ascribed a common cause for all these bodies, whereas we now know that there are a number of factors concerned in the etiology, and different cases have a variety of modes of origin. Exact clinical histories with careful classification on a histologic basis have done much to clear up many mooted points in the etiology of these peculiar bodies. Using Volkmann's general classification, we have *a*, those that are found in otherwise healthy joints, the disease, if any be present in the joint, being only that occasioned by the presence of these bodies; *b*, those that are found in diseased joints.

The author then considered the symptomatology and diagnosis at considerable length. Coming to the treatment he said that it may be of historical interest to mention some of the methods of treatment that were employed in pre-antiseptic days. Chassaignac mentions the following methods that were employed:

1. *Palliative.*—*a*, Fixation of the loose body by compression, so that it may become attached to the capsule; *b*, fixation by passing needles through a part of the capsule; and *c*, fixation by subcutaneous ligature.

2. *Radical Methods.*—*a*, Removal through direct incision; *b*, incising the skin at different levels; *c*, through subcutaneous operations performed at two sittings, the skin from a distance being displaced over the body; incision made through the skin and capsule, the body allowed to escape into the subcutaneous incision, from which it was removed at a later time after the capsule had healed.

During the pre-antiseptic period the mortality connected with these radical methods of treatment was very high. Bell recommended amputation in those cases where an operation was indicated, in preference to opening the knee-joint. The mortality at this time was about 33 per cent., and of those who escaped with their lives a great number went through life with a more or less ankylosed joint, as a result of septic infection. It is scarcely worth while to mention that the only method of treatment of to-day is to remove these bodies by direct incision.

The author concluded:

1. That the etiology of some of these bodies is yet not fully understood; but that the condition described by Konig under the name of osteochondritis desiccans explains the most of those that are found in otherwise normal joints. This deserves further investigation.

2. That few, if any, are the direct result of violence.

3. That the most pronounced symptom is the sudden onset of severe pain in the joint with locking of the joint, usually in a nearly extended position, this being followed by acute inflammatory process in the joint involved.

4. That lengthing of femur (in movable bodies in knee) may occur as a result of irritation produced by the pressure of these bodies.

5. That the only treatment for thir condition is the removal by direct incision, preferably under cocain anesthesia, as soon as diagnosis is made.

DISCUSSION.

DR. G. FRANK LYDSTON—The essayist has left very little to be said on the subject of "Floating Bodies in Joints," he having practically covered the more important points of the contributions pertaining thereto. I, of course, understand that he has not intended to dwell upon tuberculosis as the cause of movable bodies in joints. The ordinary floating cartilages or foreign bodies in joints are not of tubercular character, but we meet with very many cases in which movable bodies are found, and in which tuberculosis is the only explanation; and the more recent researches in this direction have especally emphasized the important relation of tuberculosis to these conditions. Personally, I have always regarded the majority of these cases as of inflammatory origin. I do not believe traumatism is as important a factor in the production of floating bodies in joints as is ordinarily supposed. In many instances the patient presents himself with a history of trumatism, but this means that the first injury produced by the floating body getting between the joint was supposed to be the cause and not the effect of the floating body. It is easy to understand that a floating body in a joint is not likely to give rise to any disturbance unless it is associated with some condition which impairs the functional integrity of the joint structure, until such time as a favorable opportunity is afforded for its action as a foreign body. During perhaps some movement of the joint, which the patient recalls as somewhat unusual, the foreign body slips between the joint surfaces, produces contusion, and subsequently more or less acute synovitis of greater or less degree of severity. The patient under such circumstances is very likely to present himself with a history of strain or other injury to the joint which has produced an inflammatory condition for which he consults us. The free bodies found in the joints which result from tubercular degeneration are numerous and of a cartilaginous or even bony feel, and can be readily outlined with the finger in many instances.

Laying aside the post-mortem or post-operatlve pathologic appearances, we have clinical support of the tubercular nature of these floating bodies in the fact the ordinary treatment of joint tuberculosis by injections of iodoform emulsion frequently results in the complete disappearance of the bodies.

I congratulate Dr. Halstead upon his excellent and valuable contribution to a subject which has not been as carefully studied or as well understood as could be desired.

DR. W. XAVIER SUDDUTH read a paper entitled "Suggestion as an Ideo-Dynamic Force."

The Chairman called upon DR. PATRICK to open the discussion. The doctor said: I am in no sense a psychologist, practically or otherwise, and as the paper has been essentially a psychologic one, I do not feel in the least competent to discuss it. But in accordance with the legends of the Academy, I would beg leave to decidedly differ with the reader of the paper on one point. He said in substance that suggestion is the legitimate child of science, born in the laboratories of the biologist and experimental psychologist. I would submit that it is the legitimate child of empiricism, born of the practical experience of fakirs and physicians, hundreds of years before biology and psychology were dreamed of.

DR. H. M. BANNISTER—I regret being called upon to discuss the subject of Dr. Sudduth's paper, as I do not feel prepared to do so. I can not say that I agree with him, for it seems to me he goes too far in his claims of the value of suggestion in therapeutics, and I doubt whether he will ever realize his visions of its replacing drugs to the extent he anticipates. I do not see, for example, how we are going to be able to come to the condition of voluntarily restraining the purely vegetative functions and the movements of the heart by mental effort. I should have to read his paper, however, and carefully considered it before I felt able to perfectly discuss it. But in any case my conception of the power of the human will over bodily conditions falls very far short of what I understand to be his, from the paper he has read.

DR. WM. F. WAUGH—Great discoveries in medicine are apt to be received with disfavor at first. Vaccination was violently opposed by the medical profession; hydropathy and electricity were exploited by empirics until the success of the latter compelled the physicians to adopt these methods, which, scientifically studied and applied, have become very much more valuable than when operated by the ignorant. On the other hand, Koch's tuberculin and Bergeon's gas enemas were received with all but universal enthusiasm. Judging by its reception, hypnotic suggestion, as a branch of psycho-therapeutics, seems destined to repeat the history of hydropathy. To the general practitioner, suggestion is of great interest. When one has passed through the stage of enthusiastic faith in drugs, he will find that much of the success he attributed to them was really due to the patient's faith in the doctor; so that it is often difficult to determine what is the precise value of the drug.

Dr. Sudduth made one important statement, that hypnotized persons can not be induced while in that state to do things they would not do when out of it. This should be brought to the attention of medico-legal experts and the newspaper fraternity, as a very different view is presented by them. Indeed, the common conception of hypnotism, taken from the works of Dumas and Du Maurier, has about the same relation to the truth that the gorgeous palaces of the Arabian Nights have to a modern city residence.

DR. JAMES G. KIERNAN said he should have to take issue both with Dr. Bannister and Dr. Sudduth. The will, as was claimed by Dr. Bannister, was not as had been stated by Dr. Sudduth, a simple determining factor, but a complex. There is no will, strictly speaking, but wills. When these act in unity the normal condition exists. When the union is broken a large number of hitherto unconscious states rise into consciousness, producing for instance comparatively trivial notions which often plague the comparatively normal individual by the fact that he is obliged to rid himself of these by a conscious effort to do what was previously done automatically. That the brain received and registered a large number of objectionable matters unconsciously, was excellently illustrated in the insanity of pregnancy, during which refined women used not merely the gestures and actions of courtesans, but their very expressions. It was also illustrated in the cases in which ignorant persons had registerd unconsciously expressions once heard from the Greek and Latin classics and had reproduced them during fever delirium, remaining totally unconscious of their source. The fact was, that while suggestion might act normally it certainly was most potent in the abnormal state, which was either hypnotic, or closely allied to it.

Dr. Sudduth in his claim that hypnotism and suggestion are most easily applied to normal beings, was supported only by psychologists whose opinion was of no value whatever as to the normal or abnormal, since two of those quoted had admitted on clearly insane testimony, whose nature they did not recognize, the possibility of the occurrence of ghosts. The vast majority of alienists and neurologists had found that not only was the unstable nervous system most easily affected by hypnotism, but that it was actually injured by it. This was excellently illustrated by Westphal in his experiments on animals, which he found became readily paralyzed after having been frequently hypnotized. That this must result would be obvious on an analysis of the vasomotor phenomena underlying hypnotism, and even suggestion. Rapid vasomotor alternations, such as resulted from the strong impressions produced by hypnotism, must and did derange the monarchic vasomotor centers with consequent deteriorating action, both on the walls of the blood vessels and on the parts supplied by them. The fact that the insane, as a rule, could not be hypnotized simply indicated the potency of counter-suggestion, in which way delusions acted. The insane of the abulic type were undoubtedly influenced by individual suggestion. It should be remembered also that the chief treatment of insanity, after all, consisted in suggestion, the discipline of the insane hospital acting in this manner in a beneficial way that no hometreatment could do, however skillful. The burden of proof still rested very severely on any attempt to prove any but a subjective influence in hypnotism. Suggestion undoubtedly played an enormous part in all medical practice, and was aided by surroundings tending to make the patient peculiarly susceptible to it.

With regard to the influence of suggestion in producing crime, in the vast mass of unstable degenerates no one could doubt such an influence, who had carefully perused the suicide records as to the relation of bizarre methods of suicide. An excellent illustration occurred several years ago. A patient was brought into a hospital with a suicidal wound inflicted in the vicinity of the femoral artery. The surgeon in attendance rather unwisely remarked to an overworked nurse, "If you make an attempt of that kind, cut a little lower down, you will reach the artery certainly." The man, who was depressed only from overwork, made the attempt, but fortunately did not profit by the instructions given. The case was announced in the newspapers, and three other instances in neighboring towns

occurred in rapid succession. The same thing is illustrated in the fire panics of theaters where, under the influence of the suggestion that the place is on fire, a large mass of people hear non-existent crackling flames, and smell non-existent smoke. A crowd is a being that acts but does not reflect, and hence is peculiarly liable to suggestion. The crowd is, however, not in a normal condition, for as separate units each individual would act on his own volition, and not on that of the crowd as a whole. That suggestion could be used in this manner to induce homicides, whether by an individual or by a crowd, no one who has studied lynch-law procedures can doubt. While it was true that if an individual had the secondary ego so developed as to act as a counter-ethical suggestion, he could not be induced by suggestion, whether in the hypnotic state or not, to perform crimes, in a large mass of mankind, and especially in the commercial world and among so-called society leaders, this secondary ego was very weak, and aside from the fear of law there would be nothing to act as counter-suggestion. Certainly the commercial people who could poison the insane with rotten food, who could "sweat" their employes into death, were not persons on whom the mere idea of taking another person's life would act as a counter-suggestion. These formed a large portion of the so-called intelligent normal class among whom Dr. Sudduth found such excellent subjects. On the other hand, that suggestion could act excellently as a moral factor was shown by the beneficial influence of the alcoholophobiac movements and the Keely cure.

Dr. Kiernan was prepared to take issue also with Dr. Sudduth as to the duality of the mind or its manifestations. The opinions as to this had been fought out for centuries. St. Thomas Aquinas, for example, held the still powerful physiologic argument, that as mind was notoriously the product of material structure, as it produced material effects, and as it was affected by material influences, it must be a product of matter. Dr. Kiernan was prepared to admit from a careful study of morbid states, that strong mental influence could produce even organic alterations in structure. He had seen (not to speak of other instances) Raynaud's disease produced by mental shock. Suggestion and hypnotism had a certain limited value, but no more was done with it now than had been done by Mesmer and Puysuger at the end of the eighteenth century, by Braid and Elliotson in England, and Brigham, Galt and others in the United States in the middle of this century. Dr. Crawford W. Long, the discoverer of anesthesia, had himself in company with Dr. Dugas, of South Carolina, experimented with hypnotism as an anesthetic before employing ether. All had found hypnotism of value, but all had found it too irregular an agent to be employed, as well as too dangerous in its secondary effects. THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION did not state the case too strongly when it lately announced the passing of hypnotism to the extremely moderate domain of therapy which it had occupied at the beginning of the century.

Annual Convention of the New Jersey Sanitary Association.

Atlantic City, N. J., Dec. 6, 1895.

The New Jersey Sanitary Association held its twenty-first annual session in the Brighton Casino, December 6. The session was opened at 2 P.M., by Dr. D. C. ENGLISH, of Brunswick, the President, DR. STROCK as Secretary. SENATOR HOFFMAN welcomed the association on behalf of the Mayor of Atlantic City and extended to the members the freedom of the city, the ocean, in short whatever was in sight. President English in reply, alluded to the fact that this association had now attained its majority and had established its right to a position in the State. He mentioned as noteworthy the fact that Atlantic City appropriated $20,000 a year to its Board of Health, thus showing its confidence in their ability, and enabling them to carry out the proper sanitary work of the city.

DR. O. W. BRAYMER, of Camden, read a paper entitled "Sanitary Inspection of Factories." He said there was not law adequate to the work, nor the application of the scientific knowledge. The age of operatives is regulated by a law, but it is very doubtful if this is ever enforced, as may be judged by the judged by the appearance of many of the operatives. Inspectors are not paid sufficient to carry out this work; consumption is caused by the improper diet, dust and bad air of these places, hence many workers are disabled. Capital sees the importance of looking to protection from fire, and injury from machinery, but as the supply of work-people is large, capitalists do not see the need of caring for their health. These points require education of the masses. We must teach sanitary science to the children; we must show the people that health is wealth. Again, workrooms should be ventilated and disinfected when not in use. The water closets should be cleansed and put in proper order against the return of the people. Each employe should have a separate drinking cup. There should be a washroom where the hands can be washed, and thus the lunch not be eaten with dirty hands. Seats are needed for the women, the floors should not be allowed to remain in the filthy condition in which we usually find them. Statistics show that many factory work-people are diseased and die early.

DR. STRICKLER in discussion said: He had made a careful inspection of a number of factories, particularly of textile fabrics. The number of operatives was nearly 40,000. Care should be taken at the very outset in the selection of a proper site for such a building. It should never be on made ground, and free from malaria. The drainage is generally into the sewers and cess pools; the plumbing is too often old fashioned, but in a number of instances it was as good as could be asked. A practical plumber is needed for such inspections. The cess pools rarely are ventilated and drain into a near-by stream. The drinking water, as a rule, was good, but very many drink freely of beer, which renders them unable to take the proper amount of food, and thus their strength is exhausted. The clothes worn are often not a protection from the weather, and it is a wonder that more do not die from the exposure which they voluntarily undergo. In several factories he found proper food was provided with excellent results in their ability to work. It is imperative that rest must be permitted by the provision of seats. In the case of women it was found beneficial by the better work done by them. Damp floors should not be tolerated. He was glad to be able to commend several places where the owners had wisely provided for the needs of their people. In these instances, the owners claimed direct benefits to themselves in the better quality of work obtained. He concluded that factories as a rule are not in a bad condition. He quoted one owner who claimed that he had known instances where the inhalation of oil had restored a consumptive to health.

DR. J. R. LEALE read a paper on

PROGRESS IN PUBLIC HYGIENE.

This was a creation of the medical profession, born within thirty years. It had met with much opposition from prejudice at first, even among the intelligent. Now the medical profession claim it as their own. It is generally taught in the colleges. Only three States are without a department of health. To our disgrace the National Government has no department of health. Public water supplies are being protected and improved at great expense. Drainage and the disposal of refuse are claiming and receiving attention everywhere. Disinfection is becoming better understood and enforced. The food supply is a subject which now receives close attention as to its purity. Sanitation of shops, houses, factories, etc., is demanded. Within the past few years such progress has been made that six years have been added to the average of human life. No general epidemics now devastate the community. In view of the progress which has been made within a short time, we may confidently look forward to still more rapid improvement in the future with wonderful benefit to humanity.

A telegram was received from Governor-elect Greggs, regretting that absence from the State would prevent his presence at the convention.

PROF. WILLIAM B. ATKINSON, of Philadelphia, was invited to sit as a corresponding member.

The first paper of the evening session was entitled

THE HYGIENIC SUPERVISION OF SCHOOL CHILDREN.

by BARON NILS POSSE, Principal of the Boston Gymnastic Institute. He first spoke of the importance of knowing and understanding what was to be supervised, then who was to do it. The temperature of the school room must be regulated; when it is too hot the pupils are not able to perform the work properly. The clothing must be comfortably easy, so as not to interfere with the movements. See that the ventilation is correct. Windows are for air as well as light. Fresh air need not be cold air. This is a point upon which there appears much want of understanding. Next look to the seats and desks; the back must be supported, especially the small of the back; each scholar must be suited with a chair and desk, otherwise come spinal curvatures and other similar troubles. This perhaps is the most important yet least regarded point. Recitations should not be continuous, but at the end of every three-quarters of an hour a rest of some minutes should occur. Overwork produces poor students. Perhaps it would be better to not permit each recitation to exceed half an hour. Arrange the work so that most of it will be in the afternoon; for this is a better time for work than the morning when just risen from

sleep. By afternoon the system is thoroughly aroused and ready for work. Physical training is of vast importance, but properly guarded and never to excess. Here is wherein so many instances the training is wrong. When a child evinces signs of failing, it should be dismissed to play, to seek the fresh air or to rest, as the case may demand. Education is of no possible use without health. The gymnasium is a useful and valuable adjunct to every school.

In discussing this valuable paper, Dr. Barringer asked what would be thought of placing a young lady in a seat suitable for a child of 6 years. We must fit the furniture to the pupils. There should be single adjustable desks and seats. It is not the expense that we should consider but the results, regarding it as a profitable investment from which we may expect good returns. Teach the children cleanliness, and many good things follow in its train.

Superintendent V. L. Davey, of East Orange, said ventilation is now attended to, but only in cold weather. In October and May, when it is of more importance, it is utterly neglected. Contrary to the usual impression adjustable desks cost but little more than ordinary ones. One matter of great importance is a hospital room for the reception of teacher or scholar who may be taken suddenly ill. In addition the teacher should be taught how to use such a room. Desks and floors are rarely washed. They need it at frequent intervals to keep them in a proper condition. He had known instances where this was neglected for nearly a year.

GOVERNMENT METHODS FOR PREVENTING THE POLLUTION OF STREAMS.

by C. P. Bassett, C. E., of Newark. He said: Streams are polluted and forests are destroyed at the will of those who please. All common sense shows this must be prevented, but how? Every one insists that the stream at his own door must be pure, but cares little in what condition it is when it leaves his vicinity. Voluntarily, they never attend to this vital matter. We must have laws to prevent this. We certainly have laws, but their enforcement demands too much litigation, with no one to do the work. There should be supervising authority, such as the Riverd Pollution Commission in England, which has done much good work. These have power to investigate and put a stop to all pollution. In this country, factories and houses are preferably erected on the banks of a stream that may serve as a conduit to carry off the filthy products they care not where. Stream pollution is cumulative; it gathers as it runs. A proper board or commission could regulate such factories when being built, and not wait until they are completed and then become nuisances. Massachusetts has the best results because of her law which requires the State Board of Health to take charge of the streams and can say to the community, you can do so and so, but not what may render this stream foul, whether for drinking or other use. This law is a good model for the other States. There is a crying need for it in New Jersey. In the discussion, which was quite general, the very foul condition of the Passaic River was especially noted, as it supplies several places besides Jersey City. Dr. Mortimer Lampson of that place graphically detailed the supply of filth which was offered the people of that important city as a drink.

Perry Jackson, Esq., of Beeleville, a small place on this river opposite to Jersey City, portrayed the condition of the river as it flows past. Laws were plenty, but all require that it shall be shown to be a nusiance, and by whose action, hence preventing action in the premises. Streams are everywhere regarded as natural sewers to carry away the filth of the cities or towns which grow up on their banks.

This paper

ARTESIAN SOURCES OF PUBLIC WATER SUPPLIES IN NEW JERSEY,

in the absence of its author, J. C. Smock, Ph.D., State Geologist, was read by Dr. A. W. Strickler. He outlined this very interesting and valuable paper, as follows: There are no reservoirs or subterranean pools so much talked of. Seams, joints, strata, fissures in the rocks or places filled with loose earth act as water-ways. Some earths are saturated with water and it is from thence comes the supply to the borings. The deeper we get the greater extent of water-bearing strata, and hence the greater and more constant the flow. Before a boring is made, careful examination is needed as to the geological formation, that our efforts may meet with success. Some waters are mineral because the water in its course meets soluble earths, from which we have iron, alkaline or other springs. Pollution of artesian wells is the result of the drainage into them of filth from the surface. The future of artesian wells is a great one. They will eventually be the source of the drinking water of this State.

A discussion followed in which Professor Lewis Woolman of Philadelphia exhibited a series of diagrams showing the strata and the wells of the State.

Dr. Thomas K. Reed, ex-Mayor of the city said the best way to get good drinking water was by this method. Surface water should never be used. Malarial disease in all its forms comes from the use of surface water. Deep-seated water ensures the absence of this trouble.

It should be named mal-aqua, not malaria. At the depth of 150 feet no organic life can exist, hence these waters are exempt from these impurities which engender disease. Eighty per cent. of our frame is water, hence we are all sponges, and we should be sure that that proportion should be the purest we can obtain. He objected to the name "artesian," they should rather be called "deep wells."

On motion of Dr. Henry Mitchell, Secretary of the State Board of Health, the following was adopted.

Whereas, An order of the United States Post-Office Department provides that the mails shall not be used for the transmission of diseased tissue; and

Whereas, Specimens for bacteriologic examination, when inclosed in proper packages, can be transported in the mails without endangering the health of persons who may handle them; and

Whereas, Bacteriologic examinations in cases of diphtheria and other infectious diseases constitute an invaluable defense against the spread of communicable diseases by providing an exact method for early and accurate diagnosis; be it

Resolved, That the New Jersey State Sanitary Association hereby respectfully requests the Postmaster General to so modify the order now in force that specimens of diseased tissue, when properly inclosed in approved mailing packages, may be transmitted to state and municipal authorities.

Dr. Mitchell explained that such packages had been tested in many ways; crushed beneath a railway car, smashed beneath a heavy hammer, etc., without a particle of fluid escaping.

State committees on legislation and on sanitation were appointed by the president.

M. N. Baker, C.E., of Montclair, read a paper on

PURIFICATION OF WATER SUPPLIES BY FILTRATION.

Few of the 2,500 water supplies in the United States are free from sewage. Strange how people prefer to drink their own filthy discharges! To free waters thus fouled the easiest plan is filtration. The ordinary sand-bed requires too large areas. The real danger is from bacteria. These must be removed. Mechanical filters clear the water of bad taste and odor and color. Filter beds are successfully used to remove iron, coloring matter and bacteria. The Massachusetts State Board of Health have the best opportunities to test this, as they have an appropriation annually of $25,000 for this work. Their experience has been with filter beds or tanks, the result being tested by chemists and bacteriologists. An objection was the slowness, but it was found that the water could be forced through at twice the rate with equally good results. There are no true filters in New Jersey. Mechanical filters are not favored by the Massachusetts State Board. We have some filters in the State which are used for special work, as the removal of iron or other matters.

Dr. James A. Exton, of Arlington, read a paper entitled

IMPROVEMENT OF THE LOCAL ADMINISTRATION OF TOWNSHIPS.

A uniform method of administration is much needed. Contagious and infectious diseases are not opposed as they should be. This opposition should be equal to that against law-breakers. Local boards are apt to antagonize, and the State board alone can harmonize them. Again, training in the work is required, as in very many instances the members and officers of the local boards are not so educated as to know what to do in certain cases. He had addressed queries to the local boards in Connecticut, where the best law existed for local boards, and he quoted from 1,000 replies. They have less expense and better results. The new law recently adopted there was quoted as being the best form in such cases. It is explicit and easy of enforcement. He urged it as a model for New Jersey to adopt. It would require only a few changes. He would place the appointment of all health officers in the hands of the civil service authorities and thus secure the very best talent.

Prof. C. C. Brackett, M.D., of Princeton, said: We must make board of health work a business, and carry it on with business principles. It pays well as a good investment. We should act as the manufacturers do, they select the best employés possible; so must we, and get the best talent to be found in the State. The inefficient fear to act lest they interfere with friends. Although there is a physician on the board, he often appears to see no need of action; there are no meetings, no plans; finally the matter falls into abeyance. But the manufacturer attends to it that the work is done and done

properly, and the valuable results are shown by his book. We must have better material in the boards; if necessary put them under an examination and only take those who are fit to do the work. Particularly should the doctor be examined as to his knowledge of sanitary science, and all others as to their knowledge of the laws which should apply to these cases. The boards should keep records of the whole place: thus they are able to know the cause of a disease owing to the presence of improper drainage, etc. At present there is no inducement for proper men to accept these places, as they are liable to be dropped for want of political influence or the like. Again, they are not paid enough to induce them to work. They should be kept in office during good behavior and while they do their duty. What costs nothing is worth nothing: we pay good servants well and obtain good service. When we secure these we will find excellent results.

DR. ENGLISH (the president) took the same ground. Improve the officers. Good roads are regarded as of more importance than health. Health men should always be students of sanitary science and of the laws which apply to the enforcement of what is needed for the work; they should carry out the suggestions of the State board, and feel responsible for an infectious disease that may break out in their locality. Bad roads must pay for the damage which takes place to a wagon or to a horse, but the board of health does not think of preventing disease. We must improve the people in sanitary ideas; let them know the great need of pure food, pure water, the value of quarantine; then we will have their coöperation, and this becomes the special duty of the health officers to do to the best of their power. Circulars should show the value of isolation in the prevention of the spread of disease. When disease prevails the sanitary code should be ready to stand the test of the law, the physicians should be compelled to report the cases, the houses placarded.

On motion of DR. H. MITCHELL the whole matter was referred to a committee of three to report a plan for the proper organization of the local boards.

DR. R. MEADE BOLTON, Chief of the Bacteriologic Department of Philadelphia, read a paper on

DIAGNOSIS BY BACTERIOLOGY.

He said all were not fit to be bacteriologists. They should be selected for their knowledge and experience. He had taught many, but in spite of every effort, they were not fitted for the work. It is not easy in every instance to recognize bacilli. Additional experiments are often needed to perfect the diagnosis. Animal experiments must be brought to our aid. Water examination is generally for typhoid and cholera. Here often doubt exists. Thus with cholera, other bacilli resemble the comma bacillus, and only by control experiments can we obtain the proof. An immunized guinea pig is inoculated, true comma bacilli at once die; they can not increase in number; but the similar form rapidly increases. Soil examination is needed for the agriculturist lest germs exist which may prove injurious to the cattle. The air is not loaded with microbes as was once taught; they sink to the floor and are only stirred up by the movements of people. It is not always possible to know the bacilli of typhoid fever. Still, bacteriology has been found of great value in special cases. There still exists some doubt as to there being a special bacillus of typhoid fever. In diphtheria this science proves of great value. We may diagnose the disease early, even before clinic symptoms show themselves. In cholera this has often been done, the germs being found in the feces though no diarrhea existed, and this will account for the occurrence of sporadic cases or outbreaks. Prompt diagnosis here is of great value; such cases should be isolated. This is a hardship, but it is necessary. In one instance a gentleman and his family were kept at home until they were known to be clear of the disease. So with diphtheria, the throat may show the presence of the danger, and it is hard to say what is best to do.

DR. MITCHELL said that this State was just ready to begin this work. The building is ready, good men have been secured and in a few days work will begin. He would issue a circular of information to all.

Plumbing inspection occasioned much discussion. Samples of bad work in this line were exhibited, and in the remarks of practical plumbers present these were condemned as the work of unskilled men or the result of efforts to put all the money on the outside of the house, without attending to the more important sanitary matters. The need of selected men who knew their business and felt responsible for their work was shown. Plumbers often oppose the assumption of authority by the health board; a conflict is now imminent and they as a body are proposing to have their own people appointed. It will be better to have examinations made by practical men, and preferably by those who are posted in sanitary matters connected with this business.

A resolution to that effect was unanimously adopted.

The disposal of garbage was then treated of by W. G. HOOPES, of the Atlantic City Health Board. He showed that they were able to cope with the question for eight or nine months in the year, but when the immense influx of visitors came to the shore, as they do in the summer months, then more aid is needed, and during the past year it was found that additional furnaces were required to consume it. The plant was a furnace which consumed its own gas after starting, and did the work well. Cremation was the only way to get rid of the stuff. His explanation was extremely interesting, but space will not permit of a detail.

DR. W. C. R. COLQUHOUN, health officer of Wilmington, explained the method adopted at that place. It was similar to that used at Atlantic City, and was only adopted after very careful inquiry and rigid tests. A steel furnace was employed.

On motion of Dr. Leal a resolution was adopted urging upon the Legislature action relative to the Passaic River to relieve it of its present foul condition.

The officers elected for the ensuing year were: President, Shippen Wallace, C.E., of Burlington; vice-presidents, James Owen, C.E., of Montclair; J. C. Smock, Ph.D., of Trenton (State Geologist); V. L. Davey, East Orange; recording secretary, James A. Exton, M.D., of Arlington; corresponding secretary, J. M. Watson, of Elizabeth; treasurer, George W. Howell, C.E., of Morristown.

A satisfactory balance was shown in the treasury, and it is contemplated to issue the proceedings in pamphlet form. The executive committee will decide as to the place of meeting for next December.

NECROLOGY.

RICHARD L. VAN KLEECK, M. D., of Brooklyn, died December 18, of paralysis, aged 56 years, a cerebral hemorrhage having occurred six days previously. No man in the town of Gravesend was more universally beloved than Dr. Van Kleeck. He was a leading physician in general practice. Dr. Van Kleeck was born in the town of Berne, Albany County, in 1839, and at 4 years of age he moved to Flatbush with his parents, his father being the first rector of St. Paul's Church at that place. He entered New York University, and received the degree of M.D. in 1862. After a year's service as interne in the Kings County Hospital, he began private practice in the town of Gravesend. His public positions were those of health officer and postmaster, which he held for twenty years or more. Dr. Van Kleeck was married over a quarter of a century, and his wife survives him together with his two sisters. He was of a hearty, cheery disposition; sometimes outspoken and fatherly in his advice, but always kind hearted.

DANIEL AMBROSE, M.D., formerly of Brooklyn, died in London, England, on December 16, in his fifty-third year. At the time of his death he was a M. P. of the anti-Parnellite party for the South Louth constituency, Ireland. He left Brooklyn about ten years ago, and in 1892 and 1895 secured his elections. His death is ascribed to cardiac disease. A widow and a family of nine survive, of whom the eldest son will presently go up for his medical examinations in London. Dr. Ambrose was born Nov. 14, 1843, in the County of Limerick, Ireland, his family being a race of doctors. His brother, Dr. J. K. Ambrose, was coroner of Richmond County, New York, in 1883. Dr. Daniel Ambrose received a preparatory education in Ireland and at the age of seventeen took up the study of medicine in the hospitals and schools of Dublin. In 1864 he received a diploma of a licentiate of the royal College of Surgeons in Ireland, and was made a doctor in medicine of the Queen's University in 1865. During that year he went to Brooklyn and took up his residence there and remained for a period of twenty years. In 1886 he joined the Kings County Medical Society, and was connected with St. Mary's Hospital at its inception. In 1875 the Charities Commissioners of Kings County appointed Dr. Ambrose physician to the department. In 1879, on account of ill health, he abandoned practice for a time, and a business opportunity to his liking offering itself, he accepted it, and became a man of affairs, and large ones at that, from that time onward.

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SATURDAY, JANUARY 4, 1896.

NAVAL REORGANIZATION AS IT ESPECIALLY CONCERNS THE MEDICAL PROFESSION.

The imminence of international complications, compelling Congress to reorganize the military establishment to be as effective as possible, makes that portion of the report of the Chief of the Bureau of Medicine and Surgery of the War Department which accompanied the annual report of the Secretary of the Navy, relating to the persistent vacancies in the medical corps of the Navy, of especial interest to the general professional reader.

The Surgeon-General says:

During the last fiscal year there were 269 applications made to the department for information concerning the appointment of assistant surgeons in the Navy. Replies containing instructions were promptly forwarded in every instance. Out of this number *only 33* applied for permission to appear before the Naval Medical Examining Board, as follows:

Alabama	1	New York	8
California	3	North Dakota	1
District of Columbia	1	Ohio	1
Illinois	1	Pennsylvania	1
Kentucky	1	South Carolina	1
Massachusetts	3	Tennessee	2
Michigan	1	Virginia	2
Mississippi	3	West Virginia	1
New Hampshire	1		
New Jersey	1	Total	33

Of the 33 mentioned who received permission 19 availed themselves of the opportunity to appear before the Board, and of this number there were 3 rejected physically and 12 rejected professionally, leaving only *4 out of the 269 original applicants*, representing every section of the country, who were found qualified for appointment as assistant surgeon, viz.:

Alabama	1	California	1
District of Columbia	1	New York	1

It may be well to mention, for comparison, that there is no difficulty in filling vacancies in the medical corps of the Army and Marine-Hospital Service, both corps having at present the full quota of assistant surgeons allowed by law, while at this date there are *fourteen* vacancies in that grade in the medical corps of the Navy, and the services of that number of assistant surgeons are needed at once for hospitals, ships and other stations. The law does not provide for the temporary appointment of acting assistant surgeons to meet the emergency that has arisen.

In our issue of December 14 we alluded to the reasons for the disinclination of young graduates to enter the naval medical service because of the inferior pay and status of the naval medical officer compared with those of medical officers in the army. The figures of the Surgeon-General are significant. It is absurd to suppose that among the hundreds of graduates of old schools as Harvard, the College of Physicians and Surgeons of New York, the University of Pennsylvania, Ann Arbor, our own Chicago schools and others, there are not to be found *fourteen* able to pass the examination for admission into the navy. Indeed, the members of the Naval Medical Board of Examiners have over and over declared that their examination is only such as any properly educated young physician should be qualified to pass without special preparation. It is just as absurd to believe that among these graduates there are not fourteen young men to whom the prospect of an assured income from the start is not an inducement. The only possible inference, and one that is highly creditable, is that there are not fourteen young physicians in the country who do not hold the honor of their profession so high that they refuse to enter a service where they will be subjected to indignities to which the possessor of a diploma should not be subjected, and so long as this is the case the Army and Marine-Hospital Service will continue to attract the eligible graduates, notwithstanding the allurements of foreign travel on board a man-of-war.

We have already indicated the remedy for this state of things in the elevation of the naval medical officer's position to the level of that of his army colleague, for which the time is opportune. The engineer corps of the navy has taken the lead in framing a bill for its reorganization, made necessary by the changed conditions of the new navy. The days of the reefer —when tacking and wearing were the nautical problems—when steam power was auxiliary and the engineers a tolerated body of despised mechanics—are no longer. The modern man-of-war is a complex machine, which only skilled mechanicians of the highest order of attainments can control, and the engineer corps has wisely considered only its own special needs. The medical corps should do the same. There is no reason why the number of medical officers and their requital should be graded by the number and pay of paymasters, engineers and chaplains. Within the lives of the older officers, the medical corps once occupied an independent and distinctive position. The surgeon-of-the-fleet had no parallel. The absurd imitative titles of pay director and pay inspector were created to offset medical directors and medical inspectors. The young medical officer was a ward-room officer from the start. Now he begins his naval career only as an ensign in the steerage, the messmate and associate of

undergraduates from the naval academy. The identity of the medical officer is sunk under the generic designation of the *staff*—with engineers, paymasters, chaplains, constructors, professors of mathematics and civil engineers, notwithstanding the fact that the medical department of the United States navy is contemporary with the creation of a naval force, which first appears on the statutes by act of Congress, approved March 27, 1794, and is consequently, with the line, the oldest of the coördinate branches of the naval service. To restore the medical corps to its former prestige no lower professional standard of pay and position will be equitable and acceptable than that existing in the army to-day. It is absurd that two young graduates shall enter—one the army and the other the navy—after a precisely similar ordeal of examination, to perform precisely the same character of duties, with equal responsibilities and obligations, but with such an enormous disparity of rank and reward as exists between the two services.

We are glad that the *Association of Military Surgeons of the United States* has determined to advocate the cause of its naval associates. The resolution of GEN. J. D. GRIFFITH, of Kansas City, late Surgeon-General of the State of Missouri, looking to the equalization of the medical corps of the two services, commends itself to every physician in the country and we hope they will make themselves heard through their Senators and Representatives in the Congress now in session, when the subject of the general reorganization of the navy shall be considered, and that not only the existing fourteen vacancies may be speedily filled by the flower of the profession, but, as was the case fifty years ago, there may be nearly twice as many acceptable candidates examined and approved in expectation of possible vacancies.

A VALUABLE WORK.

Much information of value is yearly consigned to oblivion by publication in the voluminous annual reports of the various heads of bureaus, chiefs of divisions, etc., at Washington. Volumes issue from the Government printing office by the ton of whose mere existence the mass of the people never become aware. How many of the sixty-odd thousand physicians of the United States have ever seen a copy of the Annual Report of the Chief of the Weather Bureau (late Signal Service)? Some few perhaps have looked over individual reports, and have been impressed with the variety and value of the climatologic data being thus slowly accumulated. But they have felt that, however interesting and suggestive the report of a year's observations may be, yet in the nature of things it is by itself of no practical value. For it is only by combining the data for any given point for some five years that they become an index, even then unreliable, of the normal climatic conditions there found. The data for ten years, however, when worked up, are of great practical value; and from the data for twenty years may be deduced with almost perfect accuracy the normal characters of any given climate.

If there be few medical men who have ever seen an ordinary Annual Report of the Weather Bureau, there are fewer still who know that in Vol. I of the report for 1885 there is a series of tables of great value, compiled, as a rule, from all observations from the date of the establishment of the various stations up to 1885. They embrace nearly every feature necessary to an exact and comprehensive knowledge of every element that goes to constitute climate. No physician can study these tables without an appreciation of the extent of his previous ignorance of the climatology of the United States, and without a deep sense of their great value. At that time, however, (in 1885) many of the stations were but recently established, and consequently the data at those points were insufficient. Ten years have now elapsed and should these tables be now brought up to date and published, they would form a volume of great and permanent value, which should be found as a reference manual in the library of every physician in this country.

Some of the tables in the work referred to might be omitted or modified, and other tables might be added. Also, some information about the physical and geological features of the country around the various stations might be appended, and the nature and sources of the water-supply, the natural drainage, vicinity of mineral springs, etc., might be briefly indicated. But, brought up to date even in its present lines, this volume of tables would be of immense practical value, not only to physicians and health-seekers, but, in an economic sense, to the agricultural and horticultural interests, as well as others. It would be a laborious task; but when it is considered that, apart from the daily use made of these observations to forecast the weather, their permanent value depends altogether upon their tabulation as above indicated, it would seem entirely reasonable and proper to ask that the work be done without further delay.

For the present, however, we can only advise those physicians who have not the existing volume to obtain it if they can, for so long as change of climate is to be intelligently prescribed it will prove invaluable. We can not mention all the tables, but will briefly indicate a few, in order that their scope and value may be apparent. These tables show, for each station: Mean normal pressure, by month and year; highest and lowest pressures; mean temperatures, by month and year; mean daily range of temperature; highest temperatures recorded, by month and year; lowest ditto; monthly maxima and minima; mean

temperature at 7 A. M., 11 A. M., and 3 P. M.; mean A. M., P. M., and midnight temperatures: monthly and annual precipitation; mean relative humidity, by month and year; dewpoint, by month and year; dates of first light and first killing frost; dates of last ditto; direction of winds, by month and year; average hourly velocity of winds, by month and year; average cloudiness (scale of 0 to 10), by month and year; average number of clear, fair and cloudy days.

These are some of the more important of the seventy-one tables of this great compilation. The editor of this JOURNAL was one of those who submitted plans for the extension of the work of the weather service into the medico-climatologic field, and naturally we are interested in seeing the successful accomplishment of this work.

LATENCY OF INFECTION AND DISEASE.

An interesting discussion that was continued through two meetings of the Royal Medical and Chirurgical Society of London, brought out some interesting points as regards the so-called latency of certain germ diseases. The participants in the discussion included, among others, such men as JONATHAN HUTCHINSON, DR. P. MANSON, J. ERNEST LANE, SIR W. BROADBENT, which fact it lends a certain importance as expressing up-to-date English opinion on the subject.

Latency, in the sense of the term as used in the discussion, implies the possibility of a disease germ lying quiescent for a longer or shorter period after its introduction instead of at once showing its virulency in the usual way, and the microbes of hydrophobia, syphilis, tuberculosis and leprosy were referred to as affording instances of this phenomenon. The matter is an important one, for as MR. HUTCHINSON stated, it has a very important bearing on some questions of infection; what is often attributed to lack of care may really be only the result of stirring up the soil containing these latent germs. It thus adds, or rather it makes us conscious of a new surgical danger, and one that no precautions can insure against. It is often impossible to say when any germ, except a very few specially inoculated ones, enters the system, and it is probable that we have many of them constantly with us, and among these more especially may be mentioned the ordinary pyogenic microbes and those of pneumonia, tubercle and diphtheria. These lacking the special soil for their development are harmless, but when some disturbance of the health or some accident occurs, as in a case reported by SIR W. BROADBENT, where a young man developed tuberculosis after a fall from a horse, they then take on their activity and produce their morbid symptoms. The germs may be encapsulated and thus released or some other disorder of the system, itself infectious or otherwise, may call out their activity.

Properly speaking, as pointed out by HUTCHINSON, true latency requires that there be no vital activity of germs and we can not therefore include a large proportion of the apparently latent cases of syphilis and probably also of tuberculosis as really falling under this head. His illustration of a field in which the seeds of poppies had lain absolutely quiescent for eight years and had then grown, is an apt one to show what is meant by true latency. Latent bacteria must be either encysted or surrounded by resistant tissues, and perhaps the most striking pathologic example in the human subject is afforded by leprosy, the infection of which it seems may be incurred in a region where it is endemic, and the disorder only appear after many years' residence in a country where it does not normally occur and where a reinfection would seem to be practically impossible. Another, which may perhaps be questioned by some, is that of hydrophobia, the mode of infection of which is altogether special and impossible to occur without the knowledge of the subject, and which has been reported as lying latent for months and years in the system. The diseases, the germs of which are liable to be always with us and from which infection may occur at any time unconsciously, such as tuberculosis, erysipelas, diphtheria, etc., can hardly serve as well as typical examples of latency, though it would be impossible to absolutely exclude it, and their relations to the subject are therefore practically just as important. It matters little, in fact, whether infectious germs are encysted in resistant tissue in an organism that is generally their prey or whether for special reasons that organism is at the time generally resistant as far as the possible breaking up of this resistance by disease or accident is concerned, but it is a very important fact to know that we may by a single exposure create the possibility of an outbreak of disease at some indefinite future time.

There is as was pointed out in the discussion, a possible distinction to be made between latency of the disease and latency of the germ, and it is probable that either condition may exist. A disorder apparently cured may be only latent, as is tuberculosis or syphilis, but the late appearing leprosy and hydrophobia are better explained by the hypothesis that the germ only had been introduced and had been lying quiescent in the system till for some reason or other it was aroused to activity. This would meet the condition of true latency as defined by HUTCHINSON better than would arrest or latency of a disease that had once developed its morbid symptoms; but, as already inferred, the difference is not one of great practical importance. The really important fact, as it seems to be a fact, is that either germs or their products can undergo an arrest in their development or progress that is not actual extinction, and may be again revived to all their original and natural viru-

lency. Our present knowledge of the subject is much more in the suggestive than in the positive stage, but the practical bearings of even the suggestions are almost infinite.

A BASE SORT OF CHRISTMAS STORY.

The president of a prominent life insurance company has contributed to one of our weeklies a "Christmas story," the turning-point of which is made to be the abominable rascality of a young medical examiner to a life insurance company. The scene is laid in Cumberland, Penn., and the rascally young doctor is named VAN DOREN. The crime alleged in the tale—and it is "founded on fact," according to the writer—was the return to the company of a false report on a certain application, for the purpose of intriguing his rival, a young lawyer, out of a matrimonial engagement. The villainous trick works to charm until the last moment, when the scamp becomes conveniently intoxicated, and reveals the fact of his false report and a long chain of disasters to his rival, so that the rival is saved from despair and an untimely grave.

This gross and horribly improbable story has been gotten up for a Christmas story, forsooth, by a man whose business for years has been largely dependent upon the painstaking and truthful work of his company's medical examiners. We do not envy the writer of the story the average current and movement of his mind during his leisure hours, if his inventive faculty can not frame for itself any purer fancies than this that he has given to the public. The story is one that is likely to rebound and create a feeling of detestation against its author in the minds of all the medical men who have anything to do with his company, and he may before long have occasion to regret that his imagination played him so sorry a trick. We are entirely incredulous as to the foundation on fact that is claimed by the writer. If he thinks he has the facts, we believe that he has been hoodwinked, and that his informants have an axe to grind. There is a certain amount of "the horrible example" about the medical wretch of the story, for we are told that he was also intemperate and a bar-room roysterer, who shortly after the exposure of his plot drank himself to death. Perhaps the story has been drawn up to scare some of the author's young medical examiners away from the demon of alcohol. This is the way the narrative is closed:

"The President of the life insurance was very much concerned as to what he ought to do about DR. VAN DOREN. He was immediately dismissed; *cela va sans dire*. But after consulting counsel—and the President was a little bit of a lawyer himself—he couldn't exactly see how the offender could be brought to bar. Fortunately, he (the President) drank himself to death in a short space; policy forfeited for non-payment of premium. His rival is still living, with a heart for any fate, and the holder of the limit in, let us say, the *Greatenormous* Life Insurance Company. The story has no moral; it has not even the usual tag—Insure in the *Greatenormous* Life Company."

We are agreed, The story has no moral. It is even devoid of morality, in its implied confiscation of the fair name of medical examiners. In this Christmas season good is to be returned for evil; not evil for evil; much less evil for good.

THE MEDICAL AND SURGICAL HISTORY OF THE WAR OF THE REBELLION.

Several Medical Societies have recently petitioned Congress to reprint the six quarto volumes of the Medical History of the War. The reprinting of this great work would indeed be desirable, but we would like to see the illustrated catalog of the Army Medical Museum printed first. The former publication being in all our large libraries is already accessible to a great many, but the immense collection of specimens illustrating anatomy, histology, pathology and military surgery, is only accessible to gentlemen residing in Washington, or visiting the capital, and the reproduction of this collection in book form would be of the highest educational value.

The publication of a carefully compiled critical review of the medical and surgical records of the Pension Office, showing the subsequent history of the vast numbers of wounded and disabled soldiers, would also be of great utility to the entire profession. The generosity of Congress has been frequently shown in many directions, but here is one that would furnish information of the highest practical value to the country.

BRITISH MEDICAL ASSOCIATION.

The *British Medical Journal* in its issue of Dec. 21, 1895, publishes a list of the members of the Association, from which it appears that the membership of that body has now reached 18,100. This shows what systematic organization can accomplish. Let our members signalize the year 1896 by bringing our membership up to 12,000. One new member by each member will do it. This done, we may surpass any other in 1897. We have great reason to be pleased with the steady increase in the membership list, and it shows that our members are taking hold in earnest, but "be not wearied in well doing." Let there be no rest until all regular practitioners are organized under the ASSOCIATION for the general welfare of the profession.

HONOR TO DR. DRAKE.—It is suggested that the name of Dr. Daniel Drake be perpetuated by the erection of a monument in Cincinnati; or, that the new medical department to be established by the University of Cincinnati, be designated the Drake Medical College.—*Medical Bulletin.*

CORRESPONDENCE.

The International Scientific Language.

CHICAGO, Dec. 23, 1895.

To the Editor:—I was very much pleased with your article in the last number of the JOURNAL on "The International Scientific Language," and I think that in the main I agree with you. But I feel sure that you did not lay sufficient stress upon the unfortunate fact that the ability to speak French is quite a different thing from the translating knowledge. The former is rarely acquired after a certain age and almost never outside of a French school or a French-speaking locality. For instance, the only French that I heard spoken by Americans at the Pan-American Medical Congress—with one or two notable exceptions—was of that variety which Chaucer designated as of "Stratford-atte-Bow," and it was excessively painful to listen to. When the time comes that a man will commence to prepare himself for the study and practice of medicine at 12 years of age,—as you know is often done abroad—the acquisition of conversational French will form part of his preliminary education, but as things now are, the ability to *translate* technical articles is about as much as one medical man out of a hundred will be likely to acquire.

But this is not what I set out to speak about. I should feel obliged if you could tell me where I can procure Kostomoire's Greek work, "On Ophthalmology and Otology of the Ancient Greeks." I have not much intention of translating it, but I wish it for reference and for my library.

Very sincerely yours, CASEY A. WOOD, M.D.

CLEVELAND, Dec. 30, 1895.

To the Editor:—I read with much interest your address on "The International Scientific Language," and heartily indorse what you said. Especially am I in accord with your ideas of the practicability of French as against the sentimentality associated with the Greek language. I sincerely hope that you will continue to use your influence to have French indorsed as the international language. Very truly yours,

WILLIAM E. WIRT, M.D.

A Typographic Error.

MUSCATINE, IOWA, Dec. 24, 1895.

To the Editor:—As I was reading an article in the issue of December 21, p. 1090 of the JOURNAL, I came across this word, "tribaism," in second column, line 41. I could not find its meaning from any books at my command nor from any of my "Roman friends." I am yours fraternally,

ELLIOTT R. KING, M.D.

ANSWER:—The word was misprinted by the omission of the letter "d." It should have been printed *tribadism*.

BOOK NOTICES.

Injuries and Diseases of the Genital and Urinary Organs. By HENRY MORRIS, M.A., M.B. Lond., F.R.C.S. 8vo, cl. pp. 478, with ninety-seven illustrations. New York: William Wood & Co. 1895.

This is an excellent monograph, quite up to date, with many special illustrations. The diseases and injuries of the scrotum, testicles, vesiculæ seminales, penis, urethra, prostate and bladder are treated of in the book. The author's advice, based as it is on large experience, is sound and trustworthy. In the matter of style, there is some ground for criticism, but as its teaching is in accord with modern views on the subject, little need be said. The book like many others, might be easily pruned, so that a loss of 5 per cent. of its superfluous words, would add to its clearness. These are usually Briticisms. "The poor fellow described them as being like *to* round clear bladders or berries," p. 264, "And was thereby able to suture the cut edges of the floor *together* around a No. 8 catheter." p. 265. "The pus burrowed *up* through the pelvis, etc.," p. 265. "The average time from *start to finish* is from three to nine months," p. 323. "One feels that the rectum is close *up* to the posterior surface, etc.," p. 333. "Nothing but a layer of cellular tissue, and *not always that* separates," p. 333. "If these means afford positive signs, *well and good;* but if not, we must not exclude," p. 440. Barring this peculiarity, the book is to be commended for its practical value, and its sound common sense.

An American Text-book of Surgery, for Practitioners and Students by various authors. Edited by WILLIAM W. KEEN, M.D., LL.D., and J. WILLIAM WHITE, M.D., PH.D. Second edition, carefully revised. Royal octavo, cl. pp. 1248. Philadelphia: 1895. W. B. SAUNDERS. For sale by subscription. Price $7.00.

Seven professors of surgery; two hospital surgeons, and one professor of ophthalmology have modestly consented to anonymously assist the responsible editors in the production of this well-known and deservedly popular text-book.

The chief criticism directed against the first edition, was that it was unequal in the relative importance given the various topics, that certain unusual operations were enlarged upon by essayists to the exclusion of other more common topics of everyday interest to the young practitioner. This criticism has been met in this edition by many additions that will materially increase the value of the book. The alterations have made only slight increase in the number of pages. Additions to surgical knowledge follow one another with such rapidity that while the pages of a text-book are still fresh from the press, omissions begin to be noticed. The additions in present volume include a section on acromegaly, a chapter on symphyseotomy, statements concerning the effect of modern small arms in military surgery, the Murphy button, the Hartley-Krause method of Gasserian ganglion removal, Schede's operation of rib resection, and many minor changes. That the book has improved there is no question, and we have no doubt the third edition will be called for in about the same time that has elapsed since the appearance of the first.

A Manual of the Practice of Medicine. By GEORGE ROE LOCKWOOD, M.D. Illustrated. 8vo, cl. pp. 935. Philadelphia: W. B. Saunders. 1896. Price, $2.50.

The author says that it has been his aim "to present in this manual the essential facts and principles of the practice of medicine in a concise and available form."

It must be conceded that he has fairly succeeded, but in our judgment much condensation can still be done with advantage. A sample of unnecessary verbiage may be seen on p. 263 where the author says: "By such exercise the really weak heart *goes to pieces*, while the healthy neurotic heart *clears up*."

It would be extremely interesting to have the author inform us of the exact pathologic change which occurs in the heart when it "goes to pieces," by any kind of exercise, or when being "neurotic" it "clears up."

Many a good book is spoiled because its author is careless in the use of words. In these days when there are so many excellent works on nearly every conceivable subject, every superfluous word inflicts unnecessary toil upon the reader. The old system of dosage is used.

NEW INSTRUMENTS.

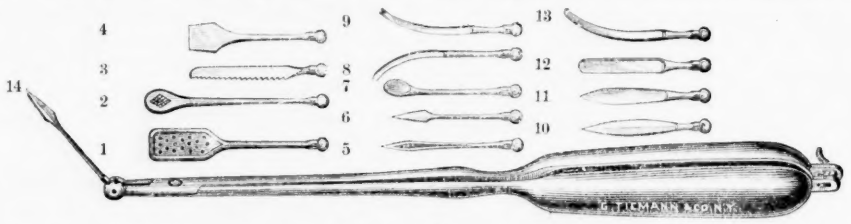
NASO-PHARYNGEAL BLADES AND UNIVERSAL HANDLES.

BY J. E. SCHADLE, M.D.
ST. PAUL, MINN.

This instrument has many advantages other than its "*e pluribus unum*" construction, which is, perhaps, the first thing that appeals to one upon inspecting it. By means of the ball

and socket joint, effected by the union of the different blades with the holder, the operator is enabled to fix his instrument at any angle he desires to fit the exigencies of the case presenting, and to hold it perfectly firm—as firm as a needle is held in a Hagedorn needle-holder. The handle is made sufficiently heavy to have it balanced well, and to be of utility in cutting where force is required in a small space.

Inasmuch as many of these blades are new, I would like to describe them briefly so that they may be better understood. The first and second blades (see cut farthest to right and immediately over the handle) are designed to be used in making caustic or alterative applications to the base of the tongue in the treatment of enlarged blood vessels or masses of lymphoid tissue. No. 1 serves an especially good purpose in such work for the reason that the remedy can be accurately applied and the epiglottis can, at the same time, be thoroughly protected. It is a small metallic, shovel-shaped officer with a smooth back, into the upper surface of which is inserted a rectangular piece of metal full of small perforations, not unlike a cullender. No. 2 is on the same principle but much smaller and of circular form, adapted more particularly to the cauterization of small points. No. 3 is a saw particularly adapted to the breaking up of adhesions between the soft palate and the posterior wall of the pharynx. No. 4 is a dissecting blade. Nos. 5 and 6 are sharp spear-pointed blades designed for exploring pus cavities, as in peritonsillar and tonsillar abscesses. Their use is invaluable, causing but little pain and enabling us to locate with perfect accuracy the site for the evacuating incision. No. 7 is a cup-shaped curette or scoop which can be used in clearing out tonsillar pockets or crypts of concretions and breaking down the diseased walls. Nos. 8 and 9 are curved probe-pointed blades which answer an admirable purpose in removing tonsillar shreds



or masses remaining after tonsillotomies. They are also of use in severing adhesion bands sometimes found existing between the Eustachian cushion and the vault of the naso-pharynx.

No. 13, like No. 4, is also a dissector and intended to be used in breaking down adhesions between the tonsil and faucial pillars.

The instrument has been constructed for me by George Tiemann & Co., of New York City. Mr. Tiemann will, I believe, be glad to show the handles and blades to any one who feels sufficient interest in it to call upon him.

PUBLIC HEALTH.

A Farm Colony for Epileptics in England. At Chalfont St. Peter, Buckinghamshire, a freehold farm to the extent of 135 acres has been given by Mr. Passmore Edwards to the National Society for the employment of epileptics. He has erected a home thereon, beside offering to build two others, one for boys and one for girls afflicted with epilepsy. There have already been some iron buildings occupied for over a year by eighteen patients, and the number of colonists has lately been increased to thirty-six. Each inmate, if able, pays 10 shillings a week, and all are employed, chiefly in farm work, which is held to have a beneficial effect over the malady, inasmuch as the patients have fewer seizures so soon as they are actively employed.

To Regulate Medical Practice.—The subcommittee appointed at the conference of representatives of the health departments of Illinois, Iowa and Missouri, which was held in Chicago last October, met in Springfield, Ill., December 20. Drs. Scott and Griffith, of the Illinois Board of Health, Dr. J. A. Scroggs, Secretary of the Iowa State Board of Medical Examiners, and Dr. Paquin, of the Missouri State Board of Health, were present. It had been suggested that the committee formulate a plan for the issuance of medical certificates which would be recognized in either of the three States, but this was not attempted and the committee confined its work to the preparation of a report regarding medical colleges, which will be presented at the next meeting of the three State boards. This report recommends that the boards shall recognize only such medical schools as have facilities for teaching all branches of medicine and are well equipped for the work. They must have laboratories and teach physiology, pathology, chemistry, bacteriology, microscopy and have clinical resources. For graduation the recognized colleges must require no less than four years of study and not less than three full courses of lectures of six months each.

Boards of Health to Control Burials. A law has been passed in New Hampshire which provides that boards of health in cities shall have charge of the granting of permits for the burial of the dead; and no interment, disinterment or removal from the city of any dead body of any human being, nor deposition thereof in any tomb or vault, shall be made without a permit from said board or their duly appointed agent, nor otherwise than in accordance with said permit. No such permit shall be issued until there has been delivered to the board a satisfactory written statement containing the facts required by Section 1 of Chapter 173 of the Public Statutes, together with the certificate of the attending physician as required by said chapter, or in absence thereof such other evidence as may be required by law. Upon the receipt of such statement and certificate the board shall forthwith countersign the same and transmit it to the city clerk for registration.

Public Baths in Brooklyn. Health Commissioner Emery sent to the mayor December 16 a communication in reference to the establishment of public baths, as proposed by an act of the legislature in 1895. This act provides that all cities of the first and second class shall establish and maintain such number of free public baths as the local board of health may determine to be necessary. Each bath shall be kept open not less than fourteen hours and be provided with hot and cold water. The creation and maintenance of river or ocean baths shall not be deemed a compliance with this law.

The public baths of Brooklyn now are river baths. Dr. Emery engaged the services of W. P. Gerhard, honorary consulting engineer of the health department, to assist in the formation of plans. He sent Mr. Gerhard's report to the mayor, together with plans for various styles and forms of bath buildings. The commissioner, recognizing the fact that the establishment of free public baths of this character will be in the line of an experiment, submits a design, calling for the construction of a one-story and basement building, wherein a separation of the sexes can be obtained and simultaneous baths afforded. The bath would cost probably not more than $12,000 or $15,000, exclusive of the land, and would provide baths for 450 persons a day. This building, said the commissioner,

can be constructed in such a manner as to permit the addition of a story, should the experiment prove to be satisfactory. In his opinion, a closely built up and densely populated portion of the city should be selected as a site. He thinks a suitable place can be found in the fifth ward, and that the maintenance would cost about $10,000 a pear.

Department of Public Health. At a meeting of the North Texas Medical Association, at Greenville, Texas, the following preamble and resolutions were adopted:

WHEREAS, In the opinion of this Association, the condition of the United States demands a department of Public Health, under the control of a secretary, who should be a member of the Cabinet of the President of the United States, in the interest of the public welfare and the prosperity of our country, therefore be it

Resolved, That our members of Congress be urged to support the bill now pending and use their influence in securing its passage.

Resolved, That the secretary be requested to transmit to our Senators and each Representative in Congress a copy of this preamble and resolutions.

Resolved, That a copy of this preamble and resolutions be spread upon the minutes of this Association.

J. C. ERWIN, President.
R. D. POTTS, Secretary.

GREENVILLE, TEX., Dec. 11, 1895.

Typhoid Fever in Duluth. *To the Editor:* The outbreak has been serious. The Health Officer reports that it is declining and that the profession are coöperating. I am now for more than a month making a series of analyses of the public water supply, both chemic and bacteriologic. We are leaving no known method untried to limit the disease or to discover the cause of the more than usual morbidity and mortality of the present outbreak.

. . . . Allowing water carriage all the influence it can be proved to have in distributing the specific cause of enteric fever, I believe the soil and other carriers are to a very considerable extent responsible and too frequently neglected.

Respectfully, CHARLES N. HEWITT, M.D.,
ST. PAUL, MINN, Dec. 27, 1895. Secretary.

A Board of Health Circular on Diphtheria. The following is an extract from a circular of information issued December 15, to the medical profession of the city of Brooklyn, N. Y., regarding diphtherial antitoxin, the importance of isolation and hospital treatment. It is signed by Dr. Z. Taylor Emery, Commissioner of Health:

"Recognizing the fact that there is at the present time an unusual prevalence of diphtheria in this city, and realizing that measures instituted to limit its spread must receive the hearty coöperation of the medical profession in order to be effective, the Department of Health desires to call your attention to the following recommendations in the hope that they will meet your approval and enlist your active support.

"It is urged in every suspicious case of sore throat, especially when exposure to diphtheria is probable, a culture should be taken for bacterial examination so that a positive diagnosis may be made at the earliest possible date. Genuine cases of diphtheria may then be properly isolated and prevented from exposing others; while persons who have not the disease may be relieved from the necessity of such isolation and the children residing on the premises may be allowed to return to school. Before the patient is isolated it is advised that the carpet and all unnecessary furniture should be removed from the room, or, if it is not practicable to remove the carpect, that it should be covered with crash which should be kept in place until after proper disinfection of the apartment. In this way the removal of the carpet for subsequent disinfection may be avoided. As a result of every effort to limit the spread of diphtheria will depend chiefly upon the degree to which isolation can be carried out, it is urged that every case be isolated as thoroughly as possible, and that, with the exception of the nurse, all persons, especially children, be excluded from the room.

"The Department is prepared to furnish free of cost to any member of the profession who applies for it at this office, fresh anti-diphtheric serum of a high grade of antitoxic power, or condition that the full dose shall be given and that the blank accompanying the bottle shall be filled out and returned to the Department. The use of antitoxin in Brooklyn having been as yet limited, your attention is called to the following figures from the Berlin authorities: Patients treated with antitoxin from Oct. 1, 1894, to April 1, 1895: Cases in private practice, 4,391; deaths, 349; mortality rate, 7.9 per cent.; hospital cases treated, 1,442; deaths, 210; mortality rate, 14.6 per cent.; total cases treated, 5,833; deaths, 559; mortality rate, 9.6 per cent.

"The great majority of cases of diphtheria occur in crowded tenements where proper supervision and isolation are impracticable or impossible. In such cases the Department urges the removal of the patients to the Board of Health Hospital, where they will receive the best of care, and where, if necessary, the mother or some other member of the family can go and remain as a nurse during the patient's illness."

Health Reports. The following health reports have been received in the office of the Supervising Surgeon-General Marine-Hospital Service:

SMALLPOX—UNITED STATES.

Michigan: Detroit, Dec. 21 to 28, 3 cases, 1 death; Rochester, Dec. 21, smallpox reported.

SMALLPOX—FOREIGN.

London, Dec. 7 to 14, 1 death.
Dublin, Dec. 7 to 14, 1 case.
Glasgow, Dec. 7 to 14, 1 death.
Constantinople, Sept. 1 to 30, 10 deaths.
Buda-Pesth, Dec. 2 to 9, 2 cases.
Cardiff, Nov. 23 to Dec. 14, 1 case.
Madrid, Dec. 3 to 10, 5 deaths.
Montevideo, Nov. 2 to 16, 6 cases.
Nogales, Dec. 14 to 21, 2 cases.
Odessa, Nov. 23 to Dec. 7, 10 cases, 2 deaths.
Rotterdam, Dec. 7 to 14, 2 cases.

CHOLERA—FOREIGN.

Constantinople, Sept. 1 to 30, 18 deaths.
Bombay, Nov. 19 to 26, 6 deaths.
Calcutta, Nov. 10 to 17, 45 deaths.
Egypt, Nov. 27, to Dec. 5: Damietta, 18 cases, 19 deaths: Borachia, 9 cases, 10 deaths; Salamoun, 1 death; Farascoor and Siunomdij, 15 cases, 13 deaths; Zagazag, 3 cases, 2 deaths.

YELLOW FEVER—FOREIGN.

Cienfuego, Dec. 8 to 15, 2 deaths.
Sagua la Grande, Dec. 2 to 14, 20 cases.
Santiago de Cuba, Dec. 7 to 14, 29 deaths.

MISCELLANY.

To Preserve Health of Females. Every person, firm or corporation employing females in any manufacturing, mechanical or mercantile establishment in New Hampshire, it has been enacted, shall provide suitable seats for the use of the females so employed, and shall permit the use of such seats by them when they are necessarily engaged in the active duties for which they are employed. A fine of not less than $10 nor more than $30 for each offense is the penalty prescribed for a violation of this law.

The Legal Valuation of a Lost Limb or Member. In the case of James Roberts, a brakeman, against the New York, New Haven and Hartford Railroad Company, before Judge Lacombe in the United States court, the jury returned a verdict for the plaintiff for $5,000. Roberts sued to recover $50,000 damages for the loss of his right leg through being struck by a low bridge. In the case of Rouss vs. the New York Biscuit Company, before Judge Wallace in the United States circuit court, the jury recently returned a verdict for $10,000 for the plaintiff. Rouss lost his right hand through an accident while at work in the defendant's factory. He sued to recover $20,000.

Can Obligate Herself for Payment. That a married woman can render herself liable by special contract for the services of a physician in attending her, the Supreme Court of North Dakota says can not be doubted, under the statute of that State. And a married woman, who has in fact incurred liability for medical attendance made necessary by an injury for which an-

other is liable, the court holds, in the case of Chacey vs. City of Fargo, decided Nov. 4, 1895, may recover as part of her damages a sum equal to the amount of such liability the same as an unmarried woman, although she has not paid for such medical attendance at the time of trial.

Inebriate Retreats in Austria. According to *Hospital*, a plan of curative treatment of habitual drunkards is likely to be taken up by the government in Austria. It is proposed to establish retreats where inmates shall be received for two years. They may enter of their own accord, or be placed there under compulsion. The period of retention may be curtailed to one year, the patient being released on a system resembling that of ticket of leave. If a patient is shown to be incurable he may be committed for life.

Circumstantial Evidence of Abortion. In the case of Dixon vs. State, decided by the Supreme Court of Nebraska, Nov. 7, 1895, where there was evidence that the health of the girl upon whom it was charged that an abortion had been criminally produced had to the time of the use of an instrument therefor been good, and there was evidence tending to show that the fetus, when born, was well developed, the court holds that this was sufficient to justify the finding that it was alive, or vitalized: especially in view of the expert testimony which was introduced. There was affirmative evidence in this case that the woman in question had never been advised that such an act was necessary to preserve her life. There was also evidence that, down to the time of this event, she was a woman of ordinarily good health. From these facts and from the other circumstances which the facts tended to prove, if the direct evidence was to be believed, the court holds that it was not only a fair inference, but it was an absolutely necessary inference, that the mother's life was not in danger, and that the object of performing the operation was not to save her life, but to prevent the birth of a child and to avoid disgrace. The inference was considered equally strong that no such operation had been advised by physicians as necessary to save her life.

The Twelfth International Medical Congress. The date of the Twelfth International Medical Congress, to be held in Moscow, has now been definitely fixed for the week August 19–26, 1897—cholera and the state of the political atmosphere permitting. The Czar has signed the Imperial Rescript sanctioning the congress, and His Majesty's uncle, the Grand Duke Sergi, Governor-General of Moscow, has consented to be its patron. The President will probably be Professor Klein, the Dean of the Medical Faculty of Moscow University: Professor Erisman, Professor of Hygiene in the same University, will be General Secretary. The Russian Government has granted a subvention of 120,000 francs toward the expenses of the congress. The official languages of the congress will be French and German.—*British Medical Journal.*

The Red Cross Advance in China. Dr. B. C. Atterbury, of Tient-sin, China, is quoted by the *Christian Herald* as showing that the Red Cross is beginning to be appreciated by officers of high grade in that country. He is reported as saying:

"The Red Cross work, besides affording foreigners a fine opportunity to show practical sympathy with the suffering Chinese, has also stirred up some of the higher native officials to take an interest in their own soldiers. Many of the soldiers are most superstitious, and have great faith in the power of charms to heal their wounds. One general, with his arm shattered by a ball, thinking the daily dressing too slow a method of cure, called in a fortune-teller. This charmer wrote some prayers on a piece of paper; this was burned and its ashes were made into a medicine, which was taken for four days. During this time the wound was not looked after, and the too superstitious general died from blood-poisoning before the paper-prayer medicine had a chance to work properly. These men also believe most thoroughly in a certain plaster, which has not only power to draw out the bullet, but will also heal the wound without any after-deformity. On the other hand, several more intelligent mandarins, seeing for themselves the superiority of the western surgery, have asked to have foreign trained men located in their camps, promising all necessary money for the hospitals. I have seen Viceroy Li several times since his return from Japan after signing the treaty of peace. The Viceroy is still the only official in China who appreciates and understands western civilization. The wound in his cheek has healed, leaving only a small dimple where the ball entered."

Liability of Corporations to pay Physician. Deane vs. Gray Bros. Artificial Stone Paving Co., decided by the Supreme Court of California, Oct. 9, 1895, was an action brought by a physician and surgeon to recover the value of professional services alleged to have been rendered to one Barsotti for and under the employment of the defendant corporation. The trial court instructed the jury that it was an immaterial consideration whether Barsotti was or was not at the time of the accident to him in the employ of the defendant, if the defendant employed the plaintiff to treat him for his injuries. This was sound law, says the supreme court, if the principle of *ultra vires*, which forbids a corporation to exceed the powers conferred upon it, was not in the case, but certainly unsound if that question were properly presented. Except in the latter case, a moral obligation would support a contract of this character. The further instruction that if defendant knew that plaintiff was so treating him on its account, and relied upon the defendant, and defendant made no objection thereto, that defendant was liable in this action, the supreme court holds did not embrace a sound principle in law, and necessitated a reversal of the judgment, rendered for plaintiff in the court below. Whether it be claimed that such facts constituted a ratification or an estoppel, it is declared equally unsound. Certainly, the court says, the mere knowledge of a corporation that some one, perchance a total stranger, has represented that such corporation would compensate a third party for services rendered to such stranger, casts no duty upon the corporation to take any affirmative action. It is not for the corporation to disillusionize such party as to the reliance placed by him upon the statements, but rather his business to substantiate them before rendering the services. Therefore the court concludes that knowledge upon the part of the defendant that the plaintiff was rendering services to the injured man and was relying upon it for compensation for the performance of such services rendered, taken in connection with the fact that the defendant, possessing such knowledge, made no objection thereto, were circumstances wholly inadequate to create a legal liability against the defendant.

Concerning Ethics. Commenting upon the resignation of Dr. Cyrus Edson and the expulsion of Dr. Edward C. Mann from the Medical Society of the County of New York, the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, in its issue of Dec. 7, 1895, makes the following astonishing statement:

"It would appear that there has been sudden and unlooked for stimulation of the ethical conscience of a body that has for ten years or more been in affiliation with the 'no Code' State Medical Society. We trust that the change of heart is deep, sincere and not based on any alleged approaching bankruptcy of the New York profession. . . . . The quickening of ethical conscience in the society, whereby professional honor is appealed to by many who have heretofore objected to any ethical rules, shows clearly enough the absolute necessity for rules of some sort. 'No Code' may be extremely interesting as a theory, but it invariably has commercialism as its underlying basis."

This proved a sufficient reason for the *Philadelphia Polyclinic*, in its issue of Dec. 14, 1895, to propound the following conundrums, which, in the vernacular of Dr. De Wolf Hopper Syntax, may be termed "corkers:"

"We should like to ask the JOURNAL in all sincerity the following questions: *First*, is the signing of certificates of nostrums by a member of the New York County Medical Society, a no Code institution, more culpable than similar action on the part of a member of the AMERICAN MEDICAL ASSOCIATION? *Second*, is there any provision in the constitution or rules of the AMERICAN MEDICAL ASSOCIATION by which one of its officers who violates its Code of Ethics can be disciplined by the ASSOCIATION itself in the absence of action upon the part of his local society?"

We may with propriety add: *Third*, is it a greater moral crime against ethics to be a member of the Medical Society of the State of New York than to advertise in the various journals that one is prepared to go to any part of the country to do any sort of professional consulting or surgical work. We wait with some interest the JOURNAL'S answer to these pertinent questions.—*Buffalo Medical Journal.*

ANSWER:—1. No.

2. Charges may be filed with the Judicial Council.

3. Degrees of "crime" are not anywhere stated in the Code.

Gray Hair Restored to Black.—Dr. George W. Griffiths of Louisville has contributed to the *Journal of Cutaneous and Genito-Urinary Diseases*, for September, a report of a case of which the following is an abstract:

"The subject of this report was an engineer, in the Fire Department of the city above named, 65 years of age, who was on duty during the alarming conflagration that occurred early in January of the past year. The night was bitterly cold, the streets being covered with snow and ice. He was out on duty from eleven o'clock in the night until two o'clock of the following afternoon, except when he was taken away overcome by sheer exhaustion, and sent in a carriage to his home, where he remained two or three hours and again returned to duty. Two or three sections of hose were leaking near his engine, and the spray was blown by a strong north wind until he was covered from head to foot with ice, which became so thick that it had to be cut or broken off from his clothing. This man was constantly at his engine, exposed to the north wind, which was carrying the spray of water from the broken hose. The top of his head was the warmest part of his body: his eyebrows and whiskers became wet, and were frozen stiff. He had a red skull-cap over his head, and his helmet on top of that: his head was not exposed at all, nor any hair, except the eyebrows and whiskers.

"I saw him the next day, when he had a very feeble pulse, and was much exhausted and worn out. He has not been in robust health for some time. The next afternoon after the exposure to the severe cold, as I have indicated, his hair turned black; and the wonder becomes greater when we consider that his hair was perfectly white before. He has been gray for eight years, and for the past three years perfectly white; before that he was blonde. Now his hair is black. I have known this gentleman for over forty years. The hair is oily, and does not seem to be dead at all. His head has been very carefully scrubbed several times, as I was inclined at first to think the change in color was caused by cinders or other foreign matter: but such did not prove to be the case."

Camping-out in Florida in Winter.—A Virginia correspondent of the *Independent* writes favorably of his experiences as to out-of-door life in the winter in Southern Florida.

"December and January are the coldest months, and these are best passed along the Gulf Coast, or on the east, south of Rockledge. The scenery is tropical and picturesque, and at this season the days are pleasant and the nights are cold enough to ensure sleep. Take your flannels and some knockabout clothing along, and, if you care for sport, add an assortment of fishing lines and your best shotgun. Do not take rifle or revolvers, unless you expect to make use of a wagon. Limit your toilet articles to absolute necessities. The shotgun and fishing tackle will be your best friends, and will render it easy for you to keep down expenses. The great point is to take just enough without touching on the superfluous. A favorite method with some campers is to hire a large covered wagon, similar to the almost obsolete 'prairie schooner,' and in this to make the tour of the State. They make camp anywhere along the roadside, or back on the bank of some lake or river, sleeping in their wagon and stopping wheresoever fancy suggests or night overtakes them. If there are three or four in the party, the expense is scarcely increased, the extra cost in one direction being saved in another. With a wagon many conveniences can be carried which should otherwise be avoided. If any of the party own rifles, these could be taken along, and would not be found amiss. In many parts of the State, there is large game. The permanent camp is the most comfortable and, if you are averse to exertion, perhaps the best; but wandering over the State is certainly the pleasantest and most inspiring. If this is your choice do not stop until you reach the extreme limit of your proposed area of travel—say, Punta Rassa or Charlotte Harbor on the west, or some of the coves or inlets of Indian River on the east. In this section the winter average of the mercury is about 70 to 75 degrees; and even very hot days, with light, off-shore winds, are generally followed by cool nights, in which that sultriness known to moist sections is seldom felt. One of the wonderful peculiarities of Florida is the rapid radiation and dispersion of heat after nightfall. I have slept night after night, for weeks and months, in a hammock slung between two pines, and even during the hot months of July and August rarely felt uncomfortable."

Medical Practice in Armenia.—An Armenian lady physician, now sojourning in Vienna, is reported in one of the London papers as having delivered a lecture showing the dark past and better prospects of the women of her land, in respect of medical care and a higher education. In the course of her lecture, she stated that she would have to deny Professor Albert's assertion as to the inferiority of women, as far as the Armenians are concerned. She said when the Armenian male looks around him, he can certainly not say that all he sees is man's handiwork, for it is rather woman's. The products of industry which have made the country famous—silks and wools, carpets and embroideries—are all made by women in Armenia, from the treatment of the raw material and the designs to the final process of manufacture. No male Armenian claims to have had a part in this work, nor does he dream of looking down upon woman as an inferior being. There is not a single proverb in all the dialects of the country that ridicules woman, although there are innumerable ones in her praise. Armenians say, "Let women learn all they can; they will be so much more useful, and we will marry them all the more willingly." She mentioned that women were now to be admitted to the St. Petersburg University, and predicted great results from this grand opportunity, as hundreds of families whose girls have passed through the grammar schools and seminaries in Tiflis, declared they should send them to study medicine, and so obtain relief from the terrible dearth of doctors in Armenia.

Hygienic Exposition of Warsaw.—Consul Rawicz writes from Warsaw, Oct. 15, 1895:

The second Hygienic Exposition of Warsaw will be held in the city of Warsaw, Poland, during the year 1896. The exposition will be opened on the 15th of May, and will close on the 15th of July. The first hygienic exposition in Poland was in the year 1887, and, judging from the success which the undertaking met with at that time, and taking into consideration the interest shown at present among medical men and the public at large in hygiene, the usefulness of the new exposition would seem to be assured. At present there are nine committees at work: 1, physico-chemic; 2, parasital; 3, architectural; 4, pedagogic; 5, on hygiene of industry; 6, on hospitals; 7, pharmaceutic; 8, statistic; and 9, public hygiene. The several committees have been assigned the following subjects:

1. The committee on physico-chemistry will take into consideration: *a*, air, water, light; *b*, food in general; and *c*, articles connected with the above, as kitchen utensils, paints, wall paper, and poisonous vegetables.

2. The parasital committee, the question of sterilization; also, the utensils used for the culture of bacilli, showing exhaustively the method of ascertaining their presence and the means for their destruction.

3. The architectural committee, human dwellings in general, past and present, and the latest improvements in hygienic building.

4. The pedagogic committee, the hygienic mode of caring for children; construction of school houses; all systems of school education, and school rooms and furniture.

5. The committee on hygiene of industry, the hygienic conditions prevailing in the homes of laborers, shops and factories; also, food and drink and vital statistics.

6. The committee on hospitals, the history and statistics of hygiene and the modern hospitals of the world.

7. The pharmaceutic committee, the literature and history of pharmacy, patent medicines, furniture, medical instruments, and all pharmaceutic results.

8. The committee on statistics, the blanks, plans, diagrams, drawings, books, and all printed matter on the subject of hygiene, meteorology, geology, hydrography and anthropology in all their details, and all sciences connected therewith; also, to provide a series of lectures and reports on its work.

9. The committee on public hygiene, the manner of living, dwellings, etc., of all classes of the population from a sanitary point of view.

Each of the above committees is composed of at least three members selected from among the doctors of medicine, professors, engineers and other specialists, under the presidency of the general committee, composed as follows: Professor Brodewski, President; Professor Przewski, Vice-President; Professor Proicke, and Engineers Grotowski and Mascicki, members; and M. Polak, M.D., Secretary.

Awards of gold, silver, and bronze medals will be made; also, diplomas and letters of honor.—*U. S. Consular Reports*, December, 1895.

A Lay View of German Chemists.—"Made in Germany" is now the recognized trade-mark for chemicals throughout the world. The dyes and by-products derived from coal tar have become a classical instance, or, as Bacon would have said, a glaring example. As we have stated, the fatherlanders have captured these trades from us. Go to Elberfeld, and what do we see? At the Farbenfabriken, besides first-class works, we are shown a laboratory unsurpassed, perhaps not equaled, in London, and employed in research or in the business there are sixty high-class chemists. In the Badische anilin und sodafabrik seventy-eight chemists are engaged. An expert witness told the Gresham commission that six skilled chemists was the maximum number employed in any English color works, if indeed, there were so many. These men are unceasingly active in research. The price to pay for progress is eternal vigilance. Every hint from England, France, America, or Italy is tried; every new material tested; every hopeful process patented. The great works at Hochst made in 1890 from 1,700 to 1,800 colors, they employed 3,000 hands, seventy chemists and twelve engineers. A firm in Offenbach with 300 workers had forty-five investigators. The lesson that has been driven home in the fatherland is that industrial processes carried on upon a large scale give great chances for discovery. Just as gas making gave anilin so the soap boilers' lye yielded iodin, the waste of salt gardens bromin, the mother liquors from the springs caesium and rubidium, the acid chambers selenium and thallium, the mines and metallurgical works gallium and germanium. Therefore, the "chemiker," on the other side of the Rhine, is always looking out for something new. He found it in the benzidin and azo dyes, the former giving Congo red and chrysamin, "the most important discovery of modern times so far as cotton dyeing is concerned." In short, as Dr. Ostwald has said, it is now a firm article of belief that "the secret of German industrial chemistry is the recognition that science is the best practice." In England it is greatly to be feared there still lingers faith in "the rule of thumb."—London *Telegraph*.

The Visceral Complications of Erythema Exudativum Multiforme.—Osler (*American Journal of Medical Sciences*, December, 1895) describes eleven cases of erythema with especial reference to the visceral lesions. By exudative erythema he says that we understand a disease of unknown etiology with polymorphic skin lesions—hyperemia, edema, hemorrhage—arthritis occasionally and a variable number of visceral manifestations, of which the most important are gastro-intestinal crises, endocarditis, pericarditis, acute nephritis, and hemorrhage from the mucous surfaces. Recurrence is a special feature of the disease, and attacks may come on month after month, or even throughout a long period of years. Variability in the skin lesions is the rule, and a case may present in one attack the features of an angio-neurotic edema, in a second of a multiforme or nodosum erythema, in a third those of peliosis rheumaticus. The attacks may not be characterized by skin manifestations: the visceral symptoms alone may be present, and to the outward view the patient may have no indication whatever of erythema exudativum. Of the eleven cases reported the visceral complications were as follows: In all gastro-intestinal crises—colic usually with vomiting and diarrhea; five had acute nephritis, which in two cases was followed by general anasarca and death; hematuria was present in three cases; hemorrhage from the bowels occurred in three cases, from the stomach in two cases, from the lungs in two cases, from the nose in three cases; one patient had spongy and bleeding gums; two patients presented enlargement of the spleen; in one there was recurring attacks of cough and bronchitis without fever; in one case there was a heart murmur. Five cases had swelling and pain in the joints. In only one of the cases reported was the attack single. In the others there were multiple outbreaks distributed over periods ranging from two months to eight years. The recurrence of severe attacks without cutaneous manifestations is a remarkable circumstance to which especial attention is directed. The relation of this disease to rheumatism and the question of the infective nature of the disease are not discussed because the author wished to emphasize the importance of the visceral manifestations of the process, which is also shown by the fact that in sixty-one cases collected by Osler (including the eleven cases now described for the first time) there were thirteen deaths, a percentage of 21.3.

The Etiology of Ozena.—Abel (*Zeitschrift für Hygiene und Infectionskrankheiten*, Bd. 21, Heft 1) concludes an elaborate bacteriologic and literary study of the processes included under the term ozena, as follows:

1. The mucous membrane of the nose is subject to a peculiar disease which begins with the appearance of isolated, minute masses of viscid muco-pus that rapidly dry into crusts. The process may extend and come to involve large districts of the nasal mucosa.

2. The above appearances are accompanied with actual changes in the mucous membrane; whether hypertrophy is the first change in all cases can not be said for certain, but the final result of the process is atrophy of the mucosa and hence the term rhinitis atrophicans.

3. In a series of these cases decomposition occurs in the crusts which is recognized by the unpleasant odor. This odor is an inconstant and secondary symptom. The cases in which it occurs are spoken of as examples of rhinitis atrophicans fetida or ozena (vera or simplex).

4. The disease may spread to the naso-pharynx—where it may also begin—to the accessory nasal cavities, the internal ear, the larynx and the trachea. The first noticeable change is the appearance of small masses of mucoid secretion.

5. The disease is an infectious one. The proof of this is seen in the transplantation of the process from the nose to the larynx or trachea of the same patient; the disease may also appear in several members of the same family. Finally the disease was produced experimentally in one case.

6. The cause of ozena is the bacillus mucosus ozenæ, which is closely related to the pneumobacillus of Friedländer, but presents several important characteristics. This bacillus is found present in the mucus in every stage of the disease; it does not penetrate into the mucous membrane. Such bacilli are not found in the nose under other conditions. When the ozena heals the bacillus disappears.

7. In one case a pure culture was introduced into the healthy nose and the first stage of ozena was produced.

8. The atrophy of the mucous membrane that develops in the course of ozena may be explained as due to poisonous substances produced by the bacillus or as due in part, at any rate, to pressure of the crusts upon the mucous membrane, the epithelial lining of which undergoes metaplasia, changing from cylindrical to squamous.

9. The factor in many cases of rhinitis atrophicans is due to a fetid decomposition of the masses of secretion, but this de-

composition is not due to the bacillus mucosus but to the action of other microörganisms which invade the mucous secondarily. The variations in this secondary invasion will explain the absence of fetor in some of the cases.

The demonstration of the probable etiologic relation of the bacillus to the atrophic rhinitis may at times become important from a diagnostic standpoint. The therapy which must be directed to destroying the bacillus necessarily meets with many difficulties on account of the numerous inaccessible cavities and recesses in the nose, and then the mucus in which the bacilli are imbedded protect the latter to some extent. The importance of careful prophylaxis in connection with the use of instruments and in order to prevent the spread of the disease from one member of the family to others is self-evident.

Practical Notes.

Iodoformin (Odorless Iodoform).—Eichengrün (*Therapeutische Monatshefte*, September, 1895) is convinced that hitherto no substitute has been found which can displace iodoform. They are mostly compounds holding iodin and giving it up by decomposition. But the action of iodoform is to be ascribed to a specific influence on the wound, rather than to the iodin. Still it is a matter of importance to remove the odor without changing the iodoform molecule or its power. The result of experiments is iodoformin, an odorless white powder, insoluble in the usual vehicles, which becomes iodoform on contact with acid or alkalin fluids. This change goes on pari passu with the healing process. Eichengrün further lays stress on the absence of irritation and a longer continuance of its activity than with iodoform. The yellow color remains longer in the wound.—*Deutsche Medicinische Wochenschrift*, Oct. 31, 1895.

Bromoform in Pertussis.—Trial was made by O. Fiertz (Inaug. Dis. Zürich, 1894) in seventy-five cases in private practice. The results were very favorable where the treatment was regularly carried out and continued fourteen days after cessation of the cough. In these cases the average duration of the paroxysms was 2.19 weeks, of the disease 3.19 weeks. In no case was the bromoform without effect. The rule for administration laid down by the writer is in brief: The initial dose in drops, for children up to ten years, should be the age plus two, given every six hours, preferably in a teaspoonful of sweetened water. Increase the dose one to two drops if the paroxysms do not abate within eight days. As soon as the paroxysms cease at night, give the dose once in eight hours. Use the remedy guardedly if the lungs threaten to fill with mucus. In case of intoxication from careless administration, use artificial respiration, wash out the stomach, give warm baths alternated with cold suffusions, moist swathing, fresh air.—*Deutsche Medicinische Wochenschrift*, Oct. 31, 1895.

Therapeutic Use of Bone Marrow. Regarding the use of bone marrow dissolved in glycerin, it may be said that some American therapeutists have commended it far more emphatically than Dr. Pepper's words would appear to indicate. Dr. McLean Hamilton has used the glycerin of red marrow in nearly twenty cases with results that appear to cast older methods of treatment quite into the shade. One striking case may be summarized as follows: A female, aged 40 years, for several years has been hysterical, anemic and incapable of making exertion without resulting back- and headache. A year ago oöphorectomy was performed, but her nervous state and general mal-nutrition persisted. A variety of cerebro-spinal neurasthenic disturbances were helped little or not at all by treatment, and it seemed impossible to improve the condition of anemia. Corpuscular poverty well marked, the red corpuscles not exceeding 2,500,000 at any time. She was placed on medullary glycerid with prompt benefit. In doses of two drachms, thrice daily, she gained over 2,000,000 corpuscles in six weeks, and her hemoglobin rose to nearly fourteen grams. In cases in which anemic headaches were the prominent feature the effects of the marrow were marked, and many such improved in a few weeks. Two brominized epileptics were decidedly benefited, and this treatment must commend itself when iron in such cases is apt to produce cerebral congestion and increase of the fits." The above remarks are quoted from a paper in the *New York Medical Journal*. Furthermore, Dr. I. N. Danforth, of Chicago, has treated a member of his own family with a similar preparation, and he believes that life was saved thereby. His preferred fomula is the following:

℞	Liq. potass. arsenitis (Squibb's)	2.5 ʒ	10
	Acid phosphate (Hosford's)	3 oz.	90
	Ext. bone marrow (Matthews') . . . to 8	oz.	240

Dose, one dessertspoonful after each meal.

Already a preparation of marrow, called carnogen, has been largely produced and put upon the New York market, purporting to be made from the medullary substance of small bones in combination with fibrin, and to have the qualities of stability and palatableness. It may be said in this connection that Dr. John S. Billings, Jr., made trial of a medullary extract at the Johns Hopkins Hospital in 1894, in four cases, two of pernicious anemia, and two of chlorosis. His results in the former disease were unsatisfactory, while he ascribes the benefits following its use in the other cases to the contained iron—a conclusion which, according to Dr. McLean Hamilton's analysis of the cases, does not seem to be borne out in those cases where red corpuscles are multiplied without any corresponding increase in the hemoglobin. To go a little further back in the history of this promising treatment for pernicious anemia, it may be said that Dr. Thomas R. Frazer, the well-known professor of materia medica and clinical medicine at the University of Edinburgh, is the parent of it, he having first reported upon it at the International Medical Congress at Rome. The first appearance of his paper in English dress was in the *British Medical Journal* for June 2, 1894, and in it the author makes no mention of the method of preparation of the remedy, but merely speaks of it as beef-bone marrow, leaving his readers to infer that the white marrow of the femurs of oxen was employed. Those who have followed him, however, have favored the use of the red marrow, obtainable from finely broken small bones, such as ribs, by extraction by glycerin. Dr. Hamilton gives the name "medullary glycerid" to the preparation used by him, and he advises those who have their uncured cases of anemia under mixed treatment, to give a fair trial to the marrow without other medicines.

Hospital Notes.

The Trustees of the Springfield, Mass., City Hospital held their annual meeting December 19. The expenditures were $21,118 for the year, and receipts $15,171, leaving a deficiency of $5,946. The income of the hospital from rents and interest on invested funds was $5,828. There were 355 patients treated in the year, including the 24 at the hospital last year. Of these 255 were discharged, having improved in health or recovered, and 44 died. A committee reported that it was expedient to build a large addition to the hospital, to cost $12,000, and to contain one of the most complete operating rooms in New England. The room will be similar to the Sims operating room in connection with the Roosevelt Hospital in New York, which the committee visited. The building will be of brick, one story high and 46 feet long.

The commissioners to locate and build the new hospital for consumptives in Massachusetts have decided to locate it in the town of Rutland, Worcester County. Rutland is the highest town in the center of the State, and is 1,200 feet above the sea level. It is on the line of the Central Massachusetts Road and twelve miles from Worcester. The selection is a compromise between the eastern and western claims. No land has been bought, but prices have been obtained on about two hundred and twenty-five acres, at about $8,000. The buildings will be begun next spring.

The eleventh annual report of the New York Post-Graduate Medical School and Hospital has been published. It embraces the period from Oct. 1, 1894, to Oct. 1, 1895. This hospital includes wards for babies, children and adults. In the last year 610 patients have been treated in the babies' wards and 1,125 in the children's and adults'. Its dispensary, which is for the poor only, has treated 19,227 persons, and 866 visits have been made by the district physician to the patients' homes.

Washington Notes.

HEALTH OFFICE WEEKLY REPORT.—The report of the Health officer for the week ended December 21, is as follows: Number of deaths (still-births not included) 103. Death rate per 1,000 per annum, 19.4; death rate per 1,000 per annum corresponding week last year, 15.7. The number of deaths reported at the Health Department fell off during the last week. From 110 the mortality declined to 103, and the annual death rate went down from 20.8 to 19.4. The improvement was general. Nearly one-third of all the deaths were from lung diseases, of which 15 were from consumption and 13 from pneumonia. With the exception of two deaths from diphtheria and one from scarlet fever the dangerous contagious diseases were in abeyance. There were eight deaths from typhoid fever and one from malarial fever. Of all who died forty were over 50 years of age while twenty-two were under 5 years old. With the death rate materially below the normal and with no immediately threatening epidemic the health conditions may be pronounced favorable.

HOSPITAL APPOINTMENT.—Dr. Francis R. Hagner, late resident physician at the Children's Hospital in this city, has been appointed on the house staff at the Johns Hopkins Hospital at Baltimore, Md. The Doctor is the son of Dr. Chas. E. Hagner of this city and a graduate of the Columbian Medical School.

A NEW FREE DISPENSARY.—The Central Union Mission has organized a free dispensary in the old postoffice building.

THE GROSS PEDESTAL.—The contract for the erection of the pedestal for the Gross statue has been awarded to a local firm. The price to be paid is $1,400. The pedestal is be of round block granite. Work will begin at once.

Detroit Notes.

THE regular meeting of the Wayne County Medical Society was held Thursday, December 26, at the Hotel Cadillac, where about one hundred physicians of that city sat down to a course supper at 8:30 P.M. After the repast Dr. Mathew D. Mann, of Buffalo, N. Y., read a paper on "Some Common Mistakes in Gynecology." The Doctor took issue with the older writers upon the subject of cancer where they state that pain is a prominent symptom of the disease, and stated that the opposite was what he had found to be the rule, that a cancerous condition of any of the organs in the female pelvis showed that those afflicted were at the first almost entirely free from pain. The Doctor cited several cases, among them one that was brought to him by a brother practitioner, in which he was obliged to take some pains to show the family physician that his patient was suffering from a malignant trouble. The Doctor laid great stress upon making a thorough examination of the pelvic organs, as only by an early diagnosis could the physician hope to accomplish much for the patient. As a rule the early diagnosis was not made and the surgeon was unable to give the desired relief. The aorta and the spinal column he had seen mistaken for tumors: and the patients themselves sometimes will insist that they have tumors. One case was cited in which there was such marked pain that he was obliged to make an exploratory incision to satisfy the patient. This relieved the patient from the pain, but he would not advise this procedure, except in extreme cases. He had patients brought to him by the attending physician for supposed tumor in front of the rectum, which turned out to be the uterus; and had known patients to examine themselves in this way, and arrive at the conclusion that they had something that must be removed. The Docter dwelt upon this mode of examination as one in which the uterus could be well examined, also the ligaments and the ovaries. The Doctor next asked his hearers to remember the ureter and not remove ovaries when the fault lies with the former. The Doctor here laughed at the idea that the uterus, an organ weighing some three ounces, lying upon the bladder would bring about cystitis, as he showed we have tumors weighing more than that many pounds, lying against and pressing down upon the bladder, without giving any symptoms of inflammation of that organ; but more often there was some trouble in the walls of the bladder itself, or in the secreting fluid; that when the urates or crystals were removed, the urine neutralized, the trouble would cease, and recommended for treatment in this class of cases, the taking of large quantities of pure alkaline water, lithia or others. Personally he found that the water did not contain enough bicarbonate of soda, and so he added some alkalin and gave liberally large draughts. He gave the history of a patient at his private hospital, where the patient, according to her own statement, had not taken a glass of water altogether for months, and he was obliged to start with teaspoonful doses. In constipation he recommends cascara, with washing out with a long rectal tube of bowel and massage to the abdomen. Where patients were weak he recommended massage with some bland applications of lanolin, etc., and considerable outdoor exercise. As to pessaries, he would certainly very much regret to do without them, especially in retroflexion, as he thought that he had accomplished a great deal in the distressing train of symptoms that this trouble brought on. There were cases outside of the operative field where only the pessary could give relief. The following gentlemen made remarks on the paper: Drs. E. W. Jenks, H. O. Walker, N. W. Longyear, Walter P. Manton, Donald Maclean, L. E. Maire, of Detroit; Charles B. Nancrede, of Ann Arbor, and G. R. Cruikshank and James Samson, of Windsor, Ontario.

THE DETROIT MEDICAL AND LIBRARY ASSOCIATION at its regular meeting, Monday, December 16, listened to an interesting paper by Dr. J. E. Emerson, entitled "The Consideration of Certain Heart Tonics." At the next regular meeting of this society, Monday, December 30, Dr. Geo. Henry Fox will read a paper entitled "Lesions of Various Cutaneous Diseases."

HEALTH OFFICE REPORT for week ending Dec. 28, 1895: Deaths under 5 years, 39; total 78. Births, male 41, female 46, total 87. Contagious diseases: Diphtheria, last report 33, new cases 23, recovered 20, died 2, now sick 34. Scarlet fever, last report 21, new cases 6, recovered 5, died 0, now sick 22. Smallpox, last report 3, new cases 0, recovered 0, died 1, now sick 2.

Change of Address.

Ingals, E. Fletcher, residence to 4757 Grand Boulevard, Chicago.
McKinlock, J., from Lakota Hotel to 3622 Michigan Avenue, Chicago, Ill.
Perry, T. B., from Milledgeville, Ga., to U. S. Marine Hospital Service, Buffalo, N. Y.
White, P., from Rockford to Van Orin, Ill.

LETTERS RECEIVED.

Ayer, N. W., & Son, Philadelphia, Pa.; Atkinson, Wm. B., Philadelphia, Pa.; Anderson, Edward, Rockwell, Md.
Blakiston, P., Son & Co., Philadelphia, Pa.; Biddle, A. P., Detroit, Mich.
Colton & Walsh, Boston, Mass.; Castle, Wilmot & Co., Rochester, N. Y.; Calder, J. R., Minneapolis, Minn.; Crume, P. G., Boswell, Ind.; Cokenower, J. W., Des Moines, Iowa; Clark, A. P., Boston, Mass.
Dunglison, Richard J., Philadelphia, Pa.; Dunavant, H. C., Little Rock, Ark.; Davis, W. H., Maquoketa, Iowa; Damrell & Upham, Boston, Mass.; Dietz, R. E. Co., New York, N. Y.; Dukehart, T. M., Baltimore, Md.; Dudley, Anna T., Chicago, Ill.; Davisson, J. A. Eldorado, Ohio.
Ellis, H. Bert, Los Angeles, Cal.
Flint, Austin, New York, N. Y.; Frontis, D. B., Ridge Spring, S. C.
Gressen, M. S., Branchville, S. C.; Gray, L. L., St. John, Mo.; Graham, D. W., Chicago, Ill.
Hummel, A. L., Advertising Agency, (3) New York, N. Y.; Holmes, Bayard, Chicago, Ill.; Harrell, W. J., Autander, N. C.; Haralson, H. H., Forest, Miss.; Henry Pharmacal Co., Louisville, Ky.
Johnson, H. L. E., Washington, D. C.
Kenyon News and Postal Sub. Co., Chicago, Ill.; Kelly, W. H., Covington, Ky.
Lawbaugh, A. J., Opechee, Mich.; Lippincott, J. B., Co., Philadelphia, Pa.; Lester, Rufus E., Washington, D. C.; Leutz, Chas., & Sons, Philadelphia, Pa.; Liebhardt, Laura L., Denver, Colo.; Latham, V. A., Chicago.
McShane, J. T., Indianapolis, Ind.; Moore's Newspaper Subscription Agency, Brockport, N. Y.
Neimyer, W. G., Chicago, Ill.
Orton, J. G., Binghamton, N. Y.
Perry, T. B., Milledgeville, Ga.; Parke, Davis & Co., Detroit, Mich.; Phippen, S. S. C., Owossa, Mich.; Peacock Chemical Co., St. Louis, Mo.; Plummer, R. N., Company, The, New York, N. Y.
Randebaugh, E. C., Columbus, Ohio; Robinson, Byron, Chicago, Ill.; Regensburger, A. E., San Francisco, Cal.; Rose, A., New York, N. Y.; Rand, D. H., Portland, Ore.; Reynolds, Dudley S., Louisville, Ky.; Richmond, Albert, Ames, Iowa; Roseberry, B. S., Lacon, Ill.
Stearns, F., & Co., Detroit, Mich.; Strueb, Carl, Chicago, Ill.; Supervising Surgeon-General, M. H. S., Washington, D. C.; Subscription News Co., San Francisco, Cal.; Steiger, E., & Co., (2) New York, N. Y.; Schieffelin & Co., (2) New York, N. Y.; Shoemaker, C. E., (2) Chicago, Ill.; Smith, A., Minneapolis, Minn.; Soudier, H. Le, Paris, France.
Treat, E. B., New York, N. Y.; Tyree, J. S., Washington, D. C.; Todd, Frank C., (2) Ft. Worth, Tex.; The F. A. Davis Co., Philadelphia, Pa.
Woodbury, Frank, Philadelphia, Pa.; Warren, W. A., Wetumpka, Ala.; Woods, Matthew, Philadelphia, Pa.; Westerman, B., & Co., New York, N. Y.; Wallace, D. R., Waco, Tex.; Weeks, T. E., Minneapolis, Minn.; Weber, A. H., Des Moines, Iowa; Wood, Wm. & Co., New York, N. Y.